THE TEACHING of GEOGRAPHY IN ELEMENTARY SCHOOLS

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The Teaching of Geography in Elementary Schools

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In the teaching of geography, as in instruction of every kind, the fundamental condition for success is that the teacher has so thoroughly mastered the subject himself, and takes so much real interest in it, that he can speak to his pupils about it, not in the set phrases of a class book, but out of the fullness of his own knowledge, being quick to draw his most effective illustrations from the daily experience of those to whom he addresses himself.

SIR ARCHIBALD GEIKIE

THE PREFACE

THIS book is the outgrowth of a number of years' experience in helping prepare teachers for work in elementary schools or for positions as critic teachers in normal schools, and is an attempt to organize the underlying principles which, from the standpoint of good geography and good teaching, are necessary before one can effectually attack the problem of framing a course of study in geography for elementary schools or of teaching any phase of this related whole. The authors have no plea to offer for a certain way of doing things which shall be applicable in all grades. They have tried to view the problem, first, from the standpoint of what good geography is; second, from the standpoint of what special problems in teaching geography offers, differing from the problems in other fields; and third, so as to see how the principles laid down by the expert geographer and educational expert can be made to meet practical needs in geography work and secure valuable training.

We must bear in mind that we are teaching *children* geography, among other things, and also that we are teaching *geography* to children. Hence our plan must be organized from two contrasted points of view, always bearing in mind that while the work must be worth while at every stage, it must also be valuable as a whole in preparing pupils for the adult life they will meet out of school.

After discussing certain of the underlying principles which run through all the work the authors attempt to show how these principles may be worked out in practice in the several grades, and finally consider certain practical

matters which it has been found from experience are of great need in the training of most teachers.

Certain chapters have been prepared by the senior author, and certain others by the junior. Each has reviewed the work of the other for the purpose of making the book a unit in character. Our experiences from different viewpoints have brought us to similar conclusions, and therefore it has been possible to prepare an outline that meets our convictions without any serious compromises.

Some of the larger suggestions have been put forth at intervals during the last fifteen years and will now be found in practice in many schools of the country. Hence we feel that our suggestions are not based on insufficient data of experience, and that they have been rigorously tested in practice.

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THE TEACHING OF GEOGRAPHY

CHAPTER I

SCOPE AND PURPOSE OF SCHOOL GEOGRAPHY TEACHING

What Good Geography Teaching Is

GEOGRAPHY teaching in schools is not merely a question of making pupils learn certain facts outlined in a course of study, made up perhaps from various sources without any conception of the value of the component parts; neither is it a matter of mechanically following a textbook which may have been compounded in the same way. Geography teaching requires primarily a good knowledge of the essential facts and principles of geography; for no teacher can teach that which he does not himself know. The second requirement is an understanding of the scope of school geography; of the relation of this part of the subject to other work in the same field; of the purposes of school geography and the ways in which the subject may best be organized and presented so as to be of the most permanent value to the pupils.

The Relation of School Geography to the Science of Geography

School geography cannot be separated from the whole vast field of geographic knowledge. Therefore the small part of the field presented in the elementary school must be geography, as this term is interpreted by the geographers who have done most to organize the science and to show its unity, in spite of its close interrelations with

biology, astronomy, history, anthropology, economics, and many other sciences. "Geography" must not continue to be what it has so long been—as taught in schools—a vast collection of more or less related facts about things on the earth; it must be a portion of the science of geography as defined by the authorities in this field.

The scope and content of geography is perhaps best indicated by the generally accepted definition: "Geography is the study of the earth in its relation to man and life"[1]; or, more fully, "Geography is the exact and organized knowledge of the distribution of phenomena on the surface of the Earth, culminating in the explanation of the interaction of Man with his terrestrial environment."[2]

Geography as thus defined involves, at any stage in one's progress in the study, the consideration of the relations of two great subjects—the earth and man. The study of geography therefore means that the "causal relation" between life and the earth shall be constantly kept in mind and that the interactions of causes and consequences shall be increasingly brought out. This causal relation is the keynote that binds the several factors of geography together as a science.

The definition of geography does not give us any clew as to the order in which we shall take up our study of earth and man in school work. It does not say that the life consequences must follow the earth causes, or the reverse. It merely indicates that however we take up the work we must be sure that what we are doing is a necessary step in the task of finally making most clear the relation between man and the earth. Hence we have a right at certain times to study one subdivision of geography alone, in order to get the best point of

[1] Mill, *Realm of Nature*, p. 331.
[2] Mill, *International Geography*, p. 2.

departure for our later work. This means, for instance, that we may study certain topics in physical geography at one time, as things by themselves, that we may have certain basic facts clear before we relate the life conditions to them. In the same way we may for a time study the life facts separately from the physical facts with which they are related, if such a method of presentation and study will make the ultimate result more strong.

The scientific definition of geography merely gives us a measure with which to judge the value of facts suggested for a course of study. Any topic that is a necessary or valuable contribution to the well-ordered study of the relations of man and the earth is good geographically. Those features of man's distribution and of his mode of life that are directly or indirectly the result of his living on the earth at a certain place, amid certain physical and racial surroundings, are possible contributions to school geography. But those ways of living or acting which are merely the results of human invention, and which have not been suggested to men's minds by the earth conditions in which they live, are not good geography, unless the geography of the world has in some way been modified by such inventions. Such topics may belong in some special phase of the study of mankind, like sociology, history, or economics, but not in that phase of geography which deals with the reasons for man's distribution over the earth or with his manner of life or thought as determined or influenced by the earth environment in which he lives.

The Geographer and the Course of Study in Geography

The scientific geographer therefore does not demand that the teacher of geography shall follow this method or

that; he does say, however, with reason and right, that the content of the school course in geography shall be geographically sound, and that the general plan of teaching shall insure the best geographical training. The maker of a course of study should see to it that his course in geography shall be geography and not something else. The geographer should also suggest in a general way how the subject should be treated so as to bring about the best geographic training. This means that while he recognizes the necessity of considering the subject as a subject, he also bears in mind that the purpose of the school course is to teach children geography, among other things, and that the best preparation of the child for his life work is a far more vital point to keep in view than the question of teaching any one subject for the subject's sake. It is obvious, however, that the best training of a child in geography will not be secured unless he acquires the best possible introduction to the content of geography and the methods of studying the subject. Hence the subject and the child are closely interwoven. While we are teaching children geography we must, for their own best advantage, teach geography to children.

The Duty of the Supervisor in Reference to the Course of Study in Geography

The task of the geographer being then to outline the content of the field and to indicate what is good geographically, the task of the supervisor or superintendent is, within these limits of content and purpose, so to organize the subject as to give children the best understanding of the phenomena of geography about them. As the geographer's chief responsibility is the subject, that of the superintendent or supervisor is the larger problem of seeing that children secure the best possible preparation

for their life work, in which preparation geography plays a small but vital part.

The Duty of the Teacher of School Geography

The teacher then, within the limits set by the scientist and the professional educator, must do his part to give the children the best possible development and to make the work practical and efficient at every step. He is to make the work personal, vital, and strong. He must see that while his work is good teaching it is also good geography teaching. He should criticize particularly the pertinency and value of the course outlined for his particular group of children, whose personal weaknesses and strengths he knows as no one else can.

The teacher therefore, within the limits set by the authorities noted above, should be perfectly free to plan his work so as to give his children the best training he can. He should adopt any "methods" that seem suited to his needs, but should never forget that he is supposed to be forging one of the necessary links in the whole chain of geographic study and that his work must be strong geographically, as it should be pedagogically. The teacher of geography in any grade, if he would do his best, must know the relations of his year's work to the whole course of study.

The Limits of School Geography

The first problem for a supervisor or superintendent is to decide the limits of school geography. It is necessary to know what pupils may be expected to have learned in reference to geography before their formal geography work begins, and which may therefore be taken as the point of departure in outlining the work. It is more important that there be a clear-cut decision as to what

pupils may reasonably be expected to know about geography at the close of their elementary-school work and what they should be able to do, because of their work in geography.

It is obvious that no good, well-knit, effective course of study can be outlined if the maker of the course has no definite ideas as to the goal he would reach, but merely blindly organizes work for the several years with no thought of the necessary climax. Yet, strange to say, this matter has been little discussed until within a few years. A study of the better known courses of study would seem to indicate that the plan of work in geography is in many cases merely a device for insuring that pupils shall have "covered both books," the elementary or primary geography and the advanced or higher geography, before the close of the elementary school.

The field covered by a pupil during his elementary-school course is but a part, though a very important part, of the geography he begins to know as soon as he walks and talks, and which, consciously or unconsciously, he studies during his whole life. School geography, therefore, should be based on the geographic results gained from nature study in the first years of school work, however scattered that work may have been. The course should be so arranged that a pupil will gain something of permanent value from the study, no matter at what age he leaves school; at the end of the seventh grade he should have a working knowledge of the elements of geography, not only valuable in daily life but as a foundation for later geographic study either by himself or in the secondary school.

From the educational standpoint there should be no break in the unity of geography teaching from the kindergarten through the university. At every stage the work

should be so arranged that what has been previously studied is a necessary foundation for the present work; the work of the moment must in the same way be based on the work which has preceded and lead up to that which follows. This principle should be followed as closely when we are considering the relation of large units of work, like that of one year to another or of the secondary to the elementary school, as it would be in the organization of a series of given lessons on one topic or even of the principal points in one lesson. In the latter case we would agree that good teaching required a well-ordered plan. Why should not this principle be followed as rigorously at all times, and for the same reason — because it is pedagogically strong?

The Purpose of School Geography

It should be borne in mind, however, that no scheme of organization of geography, however strong it may be theoretically, will be effective unless the practical needs of each year's work are kept in mind. We have to remember that in most public-school systems a large proportion of the children leave school by the end of the fifth or sixth year. Therefore, the course of study must be so arranged that a pupil will have learned much of his own country by the close of the fifth year, and that the results he may have secured will be practical and usable in later life, no matter when he leaves school. The work for any grade must also be possible for pupils with the mental experience of that grade.

Hence the practical side must be kept in mind at every step, while we see to it that the material, of advantage at the moment, is so taught as to be of the most value as a foundation for the work of the higher grades.

With a possible scope as large as the whole great

science of geography, it is no easy matter to select and organize the several parts that can be adapted to the school program so as to make the work strong geographically at every step and as a whole, while at the same time it is practical and usable.

The decision as to what should be included in a school course in geography, then, depends on our understanding of what we would like a pupil to gain from his elementary-school study of geography. The desired result may be considered under two heads: first, knowledge of geographic facts and principles; and second, power to use that knowledge in daily life both during the school years and afterward.

The Importance of Geographic Principles

Within recent years there has been a great change in public opinion as to what should be the purpose of school geography. Formerly we were satisfied if a child's mind was well stored with the facts of "sailor geography" which he had laboriously memorized. The recent emphasis in school work of the *reasons* for geographic facts has come to the front because we have seen that while the facts may change in quantity they remain true in quality, inasmuch as they are the results of certain world-wide general principles, as true to-day as they have been throughout all time. It is of more value, therefore, for a pupil to understand the reasons for the growth of such a city as New York or Chicago, because of the geographic conditions which have favored it, than it is for him to know the approximate population of these cities at the last census or the names of the railroads that enter them. It is a well-ordered principle of geography that cities spring up at certain favored places in the world because of certain geographic conditions. A knowledge

of the simpler reasons for the location of cities—as at the junction of rivers, like Pittsburgh; at water gaps or the openings to mountain passes, like Harpers Ferry or Denver; on favorable harbors, like New York, San Francisco, or Liverpool; at the crossing of natural highways of trade, like Vienna or Singapore—is of value in understanding the geography of the world, and is not merely a thing to be applied to the city under consideration. This knowledge, based on individual instances, may be summarized in a series of world-true relations or principles. Such principles of geography are an important part of the training of any educated man, and are the larger part of the knowledge of the subject on the part of the worker in geography, however advanced. Hence they should be the larger item in any course of study.

The principles of geography cannot, however, be developed and made strong unless they are based on enough facts to be clear, and unless they are accepted because they are seen to be large truths and not merely because they are stated with authority. A general principle in geography should not be presented first as a device for organizing seemingly scattered facts. It should rather be developed as the outgrowth of the causal study of a number of separate items, and later applied in the quick and effective study of other facts of perhaps larger scope.

The Importance of a Knowledge of Geographic Facts

The emphasis of principles, as being the more valuable part of geography, should not, however, be taken to mean that facts must be omitted in geography. A knowledge of principles, not illustrated in the pupils' minds by certain instances, is no more valuable than a knowledge of the

proper rules of personal conduct not applied in daily life.

Therefore a pupil must learn many facts in his geography work. So far as possible these facts should be studied causally and summarized in certain principles. Time will not, however, permit all the facts necessary for an understanding of current events, as chronicled in the newspaper, to be developed causally.

There is a certain minimum amount of geographic facts that a pupil must know by the close of the elementary-school course. Some of these—perhaps a larger part—can be the outgrowth of careful causal work. The remainder must be gained through deliberate map study and memory work. Location is not, as one author says, "merely incidental in geography." It is a vital part of geography, because geography deals with the distribution of phenomena over the world.

Workers in the field of school geography disagree somewhat as to the amount of knowledge of facts that should be gained from a school course in geography, but they agree as to the inclusion of certain facts, as is shown by a comparison of a series of papers published in the *Journal of Geography* in 1904 and 1905 under the title, "What a Child should know at the Close of his School Course in Geography." Perhaps the best summary of what is necessary on the fact side has been made by Professor Whitbeck[1] as follows:

Knowledge of Location

"Given an unlettered map of the United States, on which the states are outlined, our grammar-school graduate ought to be able to write the names of the states in their proper places. He ought to be able to do as much for

[1] R. H. Whitbeck, "Results to be expected from a School Course in Geography," *Journal of Geography*, April, 1905, pp. 149–155.

the important divisions of South America, Europe, Asia, and Africa.

"He should know the approximate location of the eight or ten best known rivers of the Mississippi system; three or four of the Pacific Slope rivers, and two or three of Canada; the three great river systems of South America; four or five of Africa, a half-dozen of Asia, two or three of the British Isles, of France, of Germany, and of Russia; also the Po and the Danube. He should, of course, know the rivers of the region in which he lives.

"He should know the location of such arms of the ocean as are highways of the world's great commercial movements.

"He should know the location of those islands and groups of islands that are real factors in the world's activities, or have a general historical interest.

"He should know the facts of position, direction of trend, etc., of the half-dozen most important mountain systems or mountain groups of North America; the Andes, Alps, Pyrenees, Apennines, Caucasus, Ural, Himálaya, and Altai; the location of a few of the most frequently mentioned peaks, such, for example, as Mt. Blanc and Mt. Everest.

"There are a few capes that are often mentioned, such as Horn and Good Hope, and their location is worth knowing.

"He ought to know something of the location of the *chief* colonies of Great Britain, France, Germany, Holland, and the United States.

"He ought to know something of the location of some twenty-five of the chief cities of the United States, what those cities stand for in our industrial and commercial life, and the advantages of their situation. There are twenty-five or thirty foreign cities whose location should

be definitely known, and also something of what those cities stand for. In addition to these, there are fifty or more other cities at home and abroad whose names ought to be familiar to the pupil. It is sufficient to know merely in what state or nation these are located."

The facts to be gained from a study of physical, commercial, and political geography must be acquired mainly through a study of the relation of causes to consequences. Not all the possible facts in any of these three great divisions of geography ought to be incorporated in school work. Only the most important, either as permanent acquisitions or as a necessary part of the whole school course, can be studied in the elementary school. These facts are well given in almost any one of the latest school geographies and need not be itemized here. Care should be taken, however, that too many details are not introduced, for an overcrowded course is less valuable as a working basis than a meager one. A teacher can develop a meager course and make it rich and valuable, while an overcrowded course, which must all be covered, leads to a memorizing of mere skeletal facts without any comprehension of the vital connecting relations and principles

Power to Do as an Aim in School Geography

Knowledge of facts or principles, however strong and complete, is of little worth unless the pupil has gained from his work the power to use these items. Unusable items are merely bits of information which will occasionally come to the surface when a similar fact is mentioned. Information is not knowledge, for no one really knows a thing until he can make it clear to others or use it for his own improvement.

Hence pupils must gain from their school work the

power to use the facts and principles of geography in interpreting the geographical news items of the day, and to apply their knowledge in the reading of history and literature, of books of description or travel. Such reading, especially of the newspapers, will bring to their attention many so-called facts in geography, perhaps startling and awe-inspiring in character, which the average reader accepts because of his natural faith in the authority of printed words. A pupil should be able to test the accuracy and value of such "facts" as a result of his geographic training, and should have learned enough at least to be skeptical concerning materials that seem to overthrow the established principles he has been taught in his school course.

A pupil should realize that geography is so vast a subject that it cannot all be presented in his school text; that geographic conditions change so rapidly that many of the details in his text of a few years back may be already out of date. He should therefore be able to use works of reference, in order to keep up to date, and use the best. The chief sources of reference are atlases, encyclopedias, gazetteers, higher textbooks in geography, books of description, and commercial reports. To be able to use an atlas a person must know how to use an index, how to use latitude and longitude in locating a place, how to read map scales and the ordinary map symbols. A pupil should be introduced in his school work to the reference volumes in geography available in the local library, that he may know what is best for reference use and learn how to gather desired information quickly and accurately.

Finally, he should gain from his work in geography, more than from any other school subject, the power of thinking accurately and quickly and of testing the

accuracy of his own or other peoples' thinking. Until nature study and elementary science are better organized and systematized than they are now, geography must remain the one organized science in the elementary-school curriculum from the study of which the best training in scientific thinking may be secured. To think clearly and accurately is one of the most important results that can be gained from one's education. A clear thinker will do his own thinking, will be less ready to yield to the will of others, will be able to gather seemingly unrelated facts into generalizations and to go out into the world and test new materials and use the parts that are valuable.

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CHAPTER II

THE ORGANIZATION OF A COURSE OF STUDY IN GEOGRAPHY

What is Good Geography Teaching?

THE teaching of geography, like the teaching of other subjects, involves the subject, the teacher, and the children who are being taught. The subject can be readily organized and classified so that it is definite and the same for all persons and places. But the teacher and the children are personalities which cannot and should not be systematized and classified according to rule. Hence the method of approaching the subject must be varied to suit, so far as possible, the particular needs of the children with whom the teacher is dealing. The teacher should be sufficiently a master of any subject to be at home in it without a book; then he can use his best personal powers in teaching the children, and can change the method of approach or the point of view for different individuals, as need demands. Such an ability to shape means to ends and to teach individuals rather than groups is a difficult task, successfully accomplished only by the most expertly trained "natural teachers." Certain principles are, however, applicable to all conditions and should be borne in mind by all teachers.

To prevent floundering, and in order to follow the lines of least resistance, the work in geography should always proceed from the known to the unknown. The work should further be arranged to give the children the best mental training and the best grasp of the subject, not primarily as a subject but as a tool in everyday life.

No teacher can succeed in giving the best training if, at least in the earlier years, he puts the development of the subject ahead of the development of his pupils. In the later years the development of the pupils may usually be best accomplished through the development of the subject. Though this is not invariably true, this method of instruction, generally followed, will lay an increasingly strong foundation for the best study and for the use of the several school subjects in after-school life.

Good geography teaching is teaching that is sound geographically and which will be judged so by geographers when they view not merely the results of the day or year alone, but these as related to the ultimate results to be gained from the school course as a whole. Good geography teaching necessitates a choice of topics in order to gain the greatest efficiency in the long run and to encourage the most rapid and strong development of the mental powers of the pupils.

Good geography teaching must be pertinent to the child's present abilities, must deal with facts of immediate use, must lead to the knowledge of facts and principles of the greatest permanent value, and must be sound pedagogically as well as geographically.

The Approach to the Adult Point of View

Such teaching does *not* mean that the method of approach at all steps should be the method of the adult mind, but such a varying point of view as will, in the course of years, best develop the adult method of learning. Therefore the work should not always be from causes to consequences, that is, from the physical features to the life conditions, as is the usual method in later study.

We sometimes see this embodied in the statement that we must follow the "pedagogical and not the logical"

method of approach, as if the pedagogical method were illogical, as it often is. Any method is generally called logical when the later stages of the work are the natural outgrowth of the earlier stages, in a definite sequence. Good pedagogy demands such a method at every stage of procedure. Hence we should recognize in geography that the best logical method and the best pedagogical method are at one time from consequences to causes and at another from causes to consequences. The latter is the method of the later years, and will be more fully developed in adult life; the former is the method of the earlier years. Both methods of procedure demand a logical sequence of topics and steps, and both are pedagogical. To reverse the time of emphasis so as to proceed from causes to consequences in the lower grades might be as bad pedagogically as it would be to follow one method only throughout the grades. Good geography teaching also demands that the teacher fit his methods to the subject and to his special needs, and that no particular "method" shall be followed exclusively.

Some Larger Problems concerning the Division of the Course of Study

In the making of a course of study in geography, supervisors and superintendents find one of the most difficult tasks with which they are confronted, and yet it is a necessary task for the reason that no one course of study can fit the particular conditions of all localities. There are certain large principles that should be considered in every course of study, and the experience of the generations has shown that, in general, school geography must follow a certain rough plan. The mental development of the children for whom the course is made, the length of time the majority of them will remain in school,

and the particular physical and industrial surroundings make it advisable, if not necessary, to have a course of study for one place that will in some ways be different from that of any other place, while at the same time it meets the demands of good geography teaching as already outlined.

Types of Courses of Study

Courses of study may be divided into four groups, as follows: (*a*) those which demand the covering of so many pages per year in a given textbook; (*b*) those which are outlined to teach the subject by a certain method; (*c*) those which are made up, like a patchwork quilt, of inviting scraps from many unrelated and uncriticized courses of study; and (*d*) those which are constructed soundly, sanely, and carefully to teach geography to children of a certain region.

Unfortunately the first class is at present the largest in number, regardless of the fact that a textbook, written to be used in all localities, cannot be the best course of study for many special places. A textbook should be a good course of study for any teacher who cannot secure a more personal course, but every teacher should be able to make the text his slave and not be the slave of the text.

Courses of the second class are relatively few in number, as they should be, for here again a certain formal treatment, with many valuable factors, is imposed on all regions regardless of local conditions.

Courses of the third class are perhaps the weakest in character and are, unfortunately, numerous. No course of study that is not outlined consistently as a unit can have ultimate strength, because the various parts do not interlock as the parts of a unified course should.

Courses of the latter group are becoming more common every day, and our teachers in training are being taught how to fit the subject to the local conditions and how to train the children to do good work in the subject. The best work can be done only when such a course of study is in hand and is followed thoughtfully, intelligently, and sympathetically, with due regard to the purposes of the work as a whole and the gain to be expected each year.

Wherever the locality, however, and whatever the plan followed, there are certain larger divisions in a course of study in geography which are borne in mind by all workers in the field. It is because these divisions have been proved and are recognized as generally valuable that it is possible to outline courses and texts that in a large way may be used as guides in all parts of the country.

The Natural Divisions of the Course of Study

The first division, only lately recognized and approved in this country but long ago adopted abroad, is called Home Geography. All the leaders in school geography teaching recognize the pedagogical and geographic strength of this phase of the work as a necessary foundation for later work.

There is also a general agreement that the study of Home Geography should lead up to a knowledge of the simpler elements of the World as a Whole. It is also generally recognized that Regional Geography should occupy a larger part of the course, and that we may divide this work into that of the intermediate years and that of the upper grades. Leaders of thought are, however, not agreed as to the number of times *all* the continents should be studied in the grades. Many courses of study demand a consideration of all the continents twice. This plan usually requires the work to be too hasty and too

scattered to be of the greatest advantage to the pupils.

There is an equally strong objection to the plan of studying no continent more than once, as is advocated by some. It is obvious, considering the fact that many children leave school by the end of the fifth or sixth year, that the United States and North America should be studied early in the course. These are the most important regions to us all, and these regions we need to know the best and to know before we take up any foreign countries. Hence it would seem beyond question that our own country should be studied first of all countries. It ought also to be studied again as late as possible in the course, so that pupils will gain as advanced and complete a knowledge of their own country as their abilities will permit. The countries of western Europe, some of the countries of southeastern Asia, and, if time permits, sections of South America should also receive an elementary and a more advanced treatment.

The best course of study, judged from the standpoint of utility, permanent effectiveness, and worth, should call for the study of certain countries twice—once early in the course and once later from as advanced a standpoint as possible. The more progressive courses of study in recent years advocate such a plan, leaving much of South America, a large part of Asia, Africa, and Australia to be studied but once, at such a time in the course as may seem most practical. Certain of these sections may be studied in the intermediate years and others in the higher grades. Hence textbooks generally treat all the continents twice so as to fit all courses of study as closely as possible, but with the expectation that the continents and countries of lesser importance will not be studied twice merely because they are included in both books in the series.

The Change of Plan in the Intermediate and Upper Grades

The method of approach to the study of a continent should be different in the intermediate grades from that used in the advanced grades. The old-fashioned "concentric" plan called for the study of all continents from the topical standpoint, working from causes to consequences but bringing out little of the causal idea. Children of the intermediate years are, as a whole, too immature for such work, and hence good teaching requires a plan more adapted to their abilities. Any plan needs to be varied as the years go on, for the same plan followed blindly becomes so hackneyed and monotonous that it provokes no thought response from the pupils.

Children in the intermediate years are more interested in the life relations found in a region, and generally have a certain acquaintance with the familiar but perhaps little understood features of their own locality. The method of analysis, characteristic of Home Geography, should therefore be followed in a similar way in the intermediate grades, and out of such an analysis should be developed an understanding and appreciation of the causal controls and influences over life. In the later years the pupils are prepared for a more advanced study from causes to consequences.

To proceed from consequences to causes in the earlier work, and from causes to consequences in the later work, is to take advantage of children's interests, to have the work related to their abilities, and to produce application by making the work varied and constantly thought-provoking. Such a plan also gives the best preliminary training for using adult geographic materials in after-school life.

The Place of Physical Geography in a Course of Study

The place that physical geography should occupy in a course of study has probably been more discussed and more experimented upon than any other phase. Physical geography obviously has a right to more than passing emphasis in any well-ordered course of study, as it is the larger part of the causal side of geography. Certain phases of the subject have practical application in the interpretation of everyday life and they offer an opportunity for excellent observational work. Physical geography includes certain processes that may be seen in operation and which therefore appeal to children who like to observe power and activity. There is a great danger, however, in giving too much attention to this subject. If studied in the earlier years teachers will probably devote too much time to it—time that might better be given to more necessary and pertinent phases of geography. Such a treatment postpones the more valuable side of geography until too late an age, and gives beginners the wrong outlook on the subject. Life geography, and not the physical features, is the phase of the subject that from every consideration deserves the greater attention in the earlier years and in the course as a whole.

The Stages of the Course of Study in which Physical Geography should be Emphasized

The physical side of geography naturally comes into the course at three distinct places, though certain aspects of the subject are used constantly throughout the work. In Home Geography certain phases of the physical environment need to be emphasized because they are some of the most striking features with which children come into

contact and because they give an opportunity for observational work which is particularly effective. Observational work needs to be based on definite things and on objects or relations that can be readily seen and understood by the pupils. A child can more easily see and study the slopes that inclose the valley about his home than he can some of the larger and more general facts of the life environment. The direction of movement should be from the definite and personal to the larger, more general, and impersonal. Hence the value of including the study of certain physical features in Home Geography.

The physical side must also be considered constantly in the study of the world by regions. The understanding of the physical conditions of climate and surface is important in all regional work. In the intermediate grades this understanding should be developed through the study of the life consequences centered about any locality. It should be borne in mind, however, that no efficient or satisfactory study of any region is possible from the life side unless that region is placed somewhere. Hence any regional work in the intermediate grades needs to be introduced with a brief consideration of the physical features, which are necessary to give a setting to the picture to be studied.

Out of a study of the lives of people from the causal standpoint, in the intermediate grades, should be developed an increased understanding of the importance of the conditions that influence or control life over the world. These controls and influences we usually find thoughtlessly grouped under the head Physical Features, but the conditions that determine the distribution of mankind over the world are something more than mere climate, surface, and oceans. The distribution of plants and animals, of the races of men, and of the great nations

is equally important. Hence we would better speak of these larger topics as the Principles of Geography, and bear in mind that out of the study of regions, with their attendant facts of life and physical features, should be developed certain generalizations as to the reasons for the geographic conditions.

These generalizations should be the summaries which are constantly being brought out, developed, and criticized in the intermediate grades, the causes coming out in the study of consequences.

Before any work is undertaken in the study of regional geography from a more advanced standpoint, the principles which have been considered more or less individually thus far need to be amplified a bit—related, systematized, and studied with sufficient thoroughness so that they can be used as a basis of work in the upper grades. Hence at this stage of progress the study of regional geography, as such, should be interrupted by a brief study of the principles.

The physical features are basal in determining the larger questions of life distribution, and therefore the simpler elements of mathematical and physical geography deserve first and strong emphasis at this time. Here physical geography rightly receives greater emphasis, as a thing by itself, than at any other stage of the work. It is necessary, however, to keep in mind here, as elsewhere, that we are not studying physical geography for itself, but as a vital and related part of a larger subject. Our choice of details and the emphasis to be given to the elementary principles will therefore be determined by the purposes toward which we are striving.

These principles are usually summarized in the so-called "Introduction" to the larger book in geography, and many teachers cover this introductory material as

if it were a "Preface" to be read and forgotten. On the contrary, these principles are introductory to good work in the upper grades, and therefore should be constantly used and applied in all succeeding work.

Thus physical geography and the principles of life geography are an important part of the course, and they should receive attention at such times and so long as is necessary from the standpoint of the needs of the work as a whole.

The Place of Industrial and Commerical Geography

Another special phase of geography teaching that must be considered with care by the maker of a course of study is the emphasis to be given to industrial and commercial geography. The geography underlying the chief industries and occupations of mankind is an extremely interesting and necessary part of the training of any one, and is destined to be of increasing value as the years go on. The problems centering around these phases of the work cannot, however, be dismissed briefly. Therefore details in reference to industrial and commercial geography will be deferred to a later chapter. Suffice it to say now that no modern course of study in geography is well balanced or properly effective unless due consideration is given to the industrial and commercial phases.

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CHAPTER III

HOME GEOGRAPHY AND THE WORLD WHOLE

What Home Geography is

HOME Geography is now recognized as the best phase of the work with which to begin the formal study of geography. There is a great difference of opinion, however, as to what Home Geography is and is not, and there is no agreement as to the objects of the work. Home Geography, reduced to its lowest terms, is a study of the simpler elements of the local geographic environment, with a view to helping children to understand their own relations to that environment and to giving them the necessary training and knowledge for proceeding into the next higher phase of the work. The relations to be studied, the facts to be observed and classified, the definitions to be developed, must be simple and elemental. Present need and future use determine what special topics shall be included in a course in Home Geography. Home Geography is not a title to include topics which might be illustrated in the locality in any order that may strike the fancy. It must be organized and planned with care.

As no two localities are exactly alike, either in their physical features or in the life relations to those features, it is not possible to organize a detailed course that can be applied blindly to any locality. Yet it may be possible, in the course of time, to develop a uniform agreement as to what elements should be emphasized in every locality, and the point of view with which the work should be approached.

Good teaching demands that the work should progress

from the known to the unknown, that is, from the facts which are personal and familiar to the children to those which are less obvious and more impersonal. The work should therefore be developed through a discussion of children's experiences and observations, and should be founded on the results gained in nature study in the earlier grades.

In order to save wandering, to give training in observation and in making good, simple generalizations, and to lay the best foundation for later geographic work, attention should be devoted to the geographic elements in the environment only, interpreting the idea of geography broadly. Gradually the work should be made more intensive and more extensive—the children should be led farther afield and should be held to more concise and accurate summaries of their observations. Care should be taken in teaching Home Geography not to call for a knowledge of distant regions, for in the nature of the case the distant regions cannot be known at this time, and children have no basis for taking up such a study until after the work in Home Geography has become a thing of the past.

The topics studied will vary in order in different localities, because the local environment will in one place suggest one series of relations to be interpreted and in another an entirely different series as a point of departure. The sequence of topics, however, should be close, and each succeeding topic should naturally grow out of the preceding study. Care also should be taken not to study isolated details but to analyze and become acquainted with related parts of important wholes. Only by such a plan can the work be given any unity or sequence.

The units selected for study should be geographically sound, while at the same time they are pertinent and

rational; that is, each unit should have some geographic foundation and contain a fundamental geographic relationship. Such units should also be of such a character as to allow the close relation of local history with Home Geography. In fact, in most places the study of local history should be carried on hand in hand with the work in Home Geography.

Definitions in Home Geography

Each topic should be summarized in a simple, generalized statement or definition which brings together the elements already studied in such a form that the generalization may be amplified and expanded as the years go on. This generalization should summarize not only the points already studied, but should be generally as well as locally true.

For instance, a summary of a hill as a place on which people usually build houses may, in some instances, be locally true, but from the standpoint of geography as a whole it is bad because generally untrue. Pupils who later find that the great cities of the world, and the greater proportion of the population of the world, are in the lowlands and not on the elevations would have to destroy this earlier generalization before they could frame a general statement that would be true in a world-wide way. Or again, a river should not be defined as a stream of water rising at a source and flowing into the sea, for several reasons. Rivers have many sources, as may be illustrated in almost any locality. Many do not flow into the sea or into any body of standing water, and a child in most localities can see only a stream flowing through the land. In most places the relation of rivers to the sea cannot, therefore, be brought out in Home Geography. Hence this relationship should be deferred

until the ocean is studied. Again, all rivers include rock detritus in some form and in varying quantity. The detritus is as important a part of the river as the water, and should not be omitted, particularly as in many places the detritus is more obvious than the flowing water. To define a river as a stream of water which carries detritus and flows through the land is, therefore, a better definition than the definition given above, because it summarizes what may be seen in any locality and can be developed or expanded as the years go on, without requiring pupils to unlearn what they have previously learned and accepted as generally true.

The formation of sound summaries and definitions is one of the hardest tasks in all geography teaching, and especially difficult in elementary work.

It need scarcely be noted in the present day that definitions should be summaries brought out through the study of observed facts, and not "texts" to be brought in at the beginning of a lesson and preached about. The purpose of a recitation in Home Geography is not to develop or make clear a definition, used as a point of departure, but to study certain simple, geographic conditions and to summarize the results in a simple, shorthand statement which will be valuable in all later work in geography. Such definitions should define and not merely describe what has been taken up, and should be formed in such a way that no two overlap. Unless a definition demarks one topic or point from all other similar topics, it is not a definition and has but little value.

The Units that may be Included in Home Geography

The units to be studied must be carefully selected and arranged for the sake of simplicity and clearness. The

teacher needs to know the geographic features underlying each unit, that he may teach individual topics so as to bring out the geography in them. Unless a teacher understands the geographic elements involved in such units he has no basis for choosing the topics to be studied, and he cannot follow a plan that will lead to more than mere information about things, or lay any foundation for later work in geography.

Many topics that might be taught have little geography in them and are hardly worth teaching at all. Our endeavor should be to choose the most important topics which have a geographic foundation, while they are also personal and interesting, and to teach them in such a way as to bring out their worth geographically.

The possible elements of most value in a locality may, for convenience, be divided into two classes—social units and earth units. The social units are as a rule the earliest to be considered because they deal with the life side and through them an understanding of the reasons for the study of the earth environment may be brought out. In practice, of course, the social and the earth units cannot be wholly separated, and neither group can be studied as a whole before the other group is taken up. Such a plan would be formal and impersonal and would prevent the best relation of causes and effects, thus defeating one of the primary purposes of the study—the understanding of the reasons for things geographic to be seen in the home locality.

The social units include the study of the reasons for the grouping of people in homes, villages, towns, cities, states, and nations; the needs of communication between groups of people and how they are met; trade relations, why and how carried on; the industrial conditions to be seen in neighboring localities, and how the children and

their parents are related to the products of different industries, with a special emphasis of the necessities of life—food, clothing, shelter, and fuel.

The earth topics are the relations of life—plant, animal, and human—to the surface features in the neighboring locality, to the drainage features, to the weather, to soils, to direction, and to distance and maps.

Not all the topics that might be included under any one of these heads should be studied, and the choice of topics and the emphasis given to them should be determined by the conditions of the local environment. Such topics as mountains or the ocean cannot well be included in a course in Home Geography in any locality where mountains are not to be seen, or which is so far from the sea or a great lake that the children have no personal knowledge of the essential features of great bodies of water. Topics that cannot be illustrated in the locality should be omitted until in the study of World Geography they are needed for clearness and completeness.

Social Units. The home is the simplest illustration of the fact that people live in groups the world over; it is the simplest instance of the fact that some form of government is necessary in every group of people, and is the best example for showing the necessity of government, because it is a form that all children know from experience. The home is also the simplest illustration of a division of labor among individuals in a group. All of these essential facts, illustrated in the home, are bases of comparison which will help children to understand similar features of a larger scope the world over. The geographical conditions which favor large groups of people in certain places make some form of government necessary—it is the necessity that has geographic significance; the division of labor among individuals in a large group causes the

interchange of products of labor which we know as trade or commerce.

The Village or City. The village, town, or city, even the grouping of two or three houses in a rural district, is a larger illustration of the same geographic elements to be seen in the home. It is more complicated and yet clearly understood if studied as a group of people brought together for some geographic reason for the common good of all concerned, as is the home group. Each group has some geographic reason for its location which involves the study of the relation of the group to its earth surroundings.

The Need of Means of Communication. The need of communication naturally arises in any group of people, because of the existence of the group and because no individual or no group is wholly independent. The ways in which communication is brought about involve a study of the earth conditions also, but the need of communication has a certain definite geographic reason wherever a group of people is located.

Industrial Groups. Just as there is a division of labor among the individuals of a household, so, for a similar but larger reason, there is a division of labor among the individuals of different localities. What these occupations are, how they are carried on, and how they are individually related to the children and people in any locality, may be studied simply or fully; but, however studied, the geography behind the industry or occupation gives meaning to the reasons for the division of labor, because of the economic advantage of such a division to the individuals of the group. The geographic conditions favoring any special industry or group of industries is another matter, but industries as a group have a common geographic reason for their existence and for being emphasized in any course of study in Home Geography.

Commerce and Trade. The exchange of products of labor naturally arises because of a division of labor among individuals or groups of people. How this trade is carried on, and our relation to it, should also be brought out as fully as the needs of the children require, but this cannot be done without considering the earth side of the subject. The geographic reasons for commerce and trade are the same, no matter in what ways this trade is carried on, and these reasons should be developed out of the study of this most general and widest form of the social relations of people or nations.

The Earth Units. The earth units necessary for an understanding of the simpler social and life conditions of a locality are few, though the details in each unit should be considered at some length in certain cases. It must be borne in mind that we are not studying any one subject to know it fully as a subject, but that we are studying the simpler features illustrated in our own locality in order to understand the reasons for the accompanying life conditions and to prepare ourselves for later work. Each topic considered should be studied fully enough to allow for the making of a summary or definition that will bring together the essential elements in a brief, definite statement. After a clear concept of the unit has been gained as a result of observation, description, comparison, and summary, the simpler causal relations to the lives of the people in the community should be brought out. In many cases it is even better to begin with an analysis of these relations and to lead to a conception of the physical unit through each analysis. For instance, a hill may be studied directly as a form to be seen in profile from the school window, and then the relations of roads, houses, and vegetation to the hill may be brought out; or a study of these relations to varying slopes may first be made and

the necessity for recognizing different slopes led up to; then the hill may be introduced as a climax to the study. In one locality, or with one set of children, one method may be preferable; in another, the other method.

The earth topics that might be studied are so many, and their relations to life so numerous, that the untrained teacher is at a loss what to study and how fully to go into details. As a rule the danger will be that too many details are considered and a fineness of classification attempted that would be too minute even for the adolescents of high-school age. The earth features may be included under the heads of surface, drainage, soils, and atmosphere. Other topics that depend directly upon these and the others outlined above are trade relations, transportation, direction, distance, and maps. Each of these larger topics may, and indeed must, be subdivided into many parts, but only those parts should be included that are to be seen in the home locality.

The Surface Features

In approaching the first study of surface features it should be remembered that what a child sees as he looks about him is not the details of the surface but the whole landscape. Our task is to help him to see varieties of form and to note the relations of life in this broad sweep of surface. The landscape in one place may be generally flat and the minor irregularities of hillock and vale so inconspicuous as to be secondary in importance. Obviously, in such a locality the idea of plain is the first to be brought out. In other localities the landscape is rolling and the varieties are so conspicuous that the concepts of hills and valleys as forms may be easily given. Care should be taken not merely to study the slopes but to study the forms. So many children unconsciously

get the idea that valleys are set about the world like canoes on a shore, or that the hills are like inverted canoes that do not touch, that particular pains should be taken to make clear the fact that slopes meet and that the side of a hill is also a part of the slope of a valley. Perhaps no more common misconception than this can be found among our children. In many cases the error is not corrected for years, and the continuity of profiles comes as a surprise in adolescent years.

The Order of Topics

The following outline will indicate the main points that the teacher should have in mind in taking up the several topics indicated. The method of approach and the details of the treatment in any given locality cannot of course be indicated here, for the method must vary with the location of the school. The order given is merely suggestive, and should be departed from freely so as to make the work best fit local conditions. The outline includes, however, all topics that will be met with in most places. When volcanic features, the ocean, or any large body of water is a part of the local environment, these topics, here introduced later, should be included. The general order of procedure here suggested is to work out from the most obvious social conditions to the landscape amid which the children live; thence to the details of surface; to the drainage that follows the slopes, as do the people; to necessary details of drainage; to the soil which, except in large cities, is available because of the slopes and water; thence to the atmosphere, which is less readily observable but none the less personal. These larger topics are the geographic features that influence the distribution and character of occupations. The interrelation of peoples naturally leads to questions of

transportation and business relations, and transportation involves distance and direction, which in turn involve maps.

In some localities the physical conditions may be best approached through an analysis of local occupations, and obviously the simpler features of maps should be introduced where first the order of topics demands their use. The order of sequence will depend not only upon local conditions but upon the interests of the children. Those topics should first be studied in which the pupils are most vitally interested. The order of topics, however, should be such that one point naturally leads to the next in a definite causal sequence.

Children's so-called interests are often temporary and fleeting. They form, therefore, a poor guide for a teacher to follow. The permanent interests are, however, more safe, as these interests usually reflect the environment amid which the pupils live. Children can be made interested in any simple features about them if these features are rightly approached and if the teacher has a sufficient knowledge of the facts and belief in their importance to teach the topics as vital things.

Children should be trained from the beginning in right ways of thinking, and this means that the teacher must order the topics so as to proceed logically from one fact to another that is the natural outgrowth of the first. To pick up every chance suggestion of an active-minded child, and to attempt to follow it out, when such a suggestion cannot be brought into line even by force, does not give training in right thinking; neither can a sound course in Home Geography be built up by picking out a curious or striking point here and another one there, as a bower bird builds a nest. Such a plan means that the result will be, like the bower bird's nest, a medley of chaotic bits without definiteness.

In other words, a teacher who blindly follows the supposed interests of children will often find himself straying from the main highway into a blind alley from which he must grope his way back to the main thoroughfare, and start again. Yet every chance suggestion which can be brought into line should be used, not only because one or more pupils may be temporarily interested therein, but also because such a plan will show how seemingly unrelated thoughts may be related, and will illustrate how to organize and classify bits of information.

THE ESSENTIAL ELEMENTS OF THE MORE IMPORTANT EARTH UNITS

Plains:

Almost universal location of houses on the more gentle slopes in a given landscape.

Broad and often long-distant views.

Arrangement of streets and roads and division of area into farms and individual land holdings.

Ease of transportation and travel.

Minor irregularities as related to crops or vegetation.

Names for local details of surface when those details are of sufficient definiteness to need naming.

Rolling Land:

Ready division of landscape into hills and valleys.

Variety in slopes. Beauty of scenery.

Use of slopes by vegetation and animals; by man, in reference to home building, traveling, or crops; by children, in their play or in going back and forth to school.

Rugged Lands (Mountainous Regions):

Steepness, extent, and variety of slopes.

Scenery. Quality of air at different altitudes.

Relation to summer or health resorts when local mountains are so used.

Relation to highlands, of which mountains are usually a part, as indicated by roads, use of passes, and general avoidance of peaks.

Relation of mountains to forests, to hunting, to wild animals, to roads and railroads, and to minerals.

Plateaus:

General character of top and lateral slopes.

Profiles.

Depth and use of valleys.

Relation to animals and plants, to occupations, and to travel, as in above topics.

Running Water:

Origin of running water.

Occurrence of water in rocks of earth and in air.

Uses of water by animals, plants, and men.

Sources of underground water, wells, springs. Water supply in cities.

Presence of earth matter in spring water; in running water.

A river as a stream of water and earth matter, or detritus, flowing through the land.

Presence of detritus suggesting source of material and effects of running water on land surfaces.

Simpler features of river work.

Uses of rivers by men.

A river system as the combination of streams that unite in one main channel.

River basin as an area whose water and detritus are being removed by one system.

Relation and work of branches or tributaries.

Divides between rivers and where found.

Changes in slope of river bed as indicated by occurrence of shallow rapids and deeper pools, or of lakes and rapids or falls.

Uses of lakes and falls; swamps.

Deltas; how formed, and uses.

Flood and alluvial plains; relation and uses.

Note that all these features cannot be illustrated in many localities. Hence few beginning courses should contain all the items mentioned. Only those terms or definitions should be included which are needed for clearness and as a basis for the immediately succeeding work.

Soils:

Relation of soil to solid rock and detritus.

Simple consideration of what soil is and how it is formed.

Emphasis of combination of organic and inorganic materials in soil.

Relation of soil to slope.

Meaning of fertile and infertile soils.

Importance of soils from the standpoint of use to plants, animals, and men.

Classification of soils as to origin or as to character should not be attempted unless the simpler divisions of local soil will help make clear the matter of fertility or infertility.

Atmosphere:

Proof of atmosphere about us, based on analysis of children's experiences with wind.

Uses of atmosphere and of wind.

The seasonal weather of the locality and its relation to the plants and animals and to mankind. Emphasize especially relation to occupations, to kind of clothing used, and to sports children indulge in at each season.

Note that children should be taught to observe weather phenomena at this stage without the use of any instruments except a thermometer. They should be called upon to make daily records for only short periods at a time. Observations for a week or two, three or four times a year, are much more valuable than one continued period of observations lasting a month. Children should realize that the observations are taken for a purpose, and not as a matter of routine or as an item of drudgery. These observations should be studied and compared in class, and made the basis for studying seasonal types of weather. The generalizations made should be simple and accurate and capable of being applied in the interpretation of the weather experienced.

The Necessities of Life

The study of these topics, as an outgrowth of the experiences of children, lays a good foundation for following their experiences gradually outward until the whole world is seen in its relation to the community. The breakfast table and the physical needs of daily life suggest the point of departure. The necessities of life—food, clothing, shelter, and fuel—are easily studied first-hand, and through their study children may be led farther and farther afield until the whole world is encompassed, the point of view being always the same—our dependence on all parts of the world. The items first selected for study should be those of near-by origin, such as milk, vegetables, and other perishable products. In cities and large towns these products are mainly secured from the neighboring rural districts, and hence perhaps introduce the pupils to areas beyond their experience. Under each topic study its origin, the simpler elements of its production, how it is brought to the community, and how distributed. This

involves a study of the elements but not the technical details of the local occupations and of transportation. At this stage of progress the local map will of necessity be introduced as a means of showing relative position, distance, and direction.

Following the study of the necessities of local production, the same method of procedure should be followed radially outward to distant parts of our country. The wheat and flour, the meats, butter, cotton, wool, fuels, lumber, bricks, and other necessities may all be traced to their sources, and the physical and the human relations to the areas of production studied.

How to Introduce the Geography of Distant Regions

Thus a knowledge of our relation to our own country, and of our country as a great nation, in which we should all feel a patriotic pride, may be built up. Somewhere in the plan, varying with the locality, children must be brought in their studies to the shore, and must be given the story of our relation to the ocean.

In New York or San Francisco and other port cities our relations to the great bodies of standing water must come in early in the course. In interior localities these topics should be deferred until in the process of moving outward the study of the ocean naturally comes in. Here we may well study harbors, wharves, lighthouses, life-saving stations, and other human relations to the ocean, to show how commerce is carried on and property protected on the sea.

Such a method of procedure along lines of mutual relationship is more natural than a procedure along political boundaries. Why should a child be led outward in concentric circles from the schoolroom, to the school

yard, to the street, the block, the ward, the city, the county, the state, the nation, when the intimate things of his life relate him to more distant regions than to these political units of area?

The radial plan of procedure does not in any way interfere with a development of the knowledge of the town, township, state, and nation as political units, but it makes it possible to develop our relations to them rather than to present them as invisible bounds that hem us in constantly.

The same plan of procedure may be followed beyond the sea, until the whole world is summarized as a globe occupied by many peoples doing different things because of varied environing conditions, and all bound together in an intimate interdependence. The teacher should see to it that the products selected in the work as a whole introduce the children to the several continents and the several heat belts, for a summary of the work should be a knowledge of the distribution of the heat belts as a preparation for the continental work of the intermediate grades. The plan followed by the teacher must be well thought out, but the order of procedure must vary with circumstances. For instance, it is necessary for completeness to study at some time products secured from the Cold Caps, and at another, products from the Hot Belt. The latter, other things being equal, should perhaps be studied first, as they are more familiar to the children. But no hard and fast rule can be laid down, for the choice of the particular country to be studied at a particular time would naturally be influenced by the season of the year, by a striking "spell of weather," or perhaps by some special interest in some corner of the world. Before the work is complete the following regions should be considered. The products mentioned below are merely suggestive. Any one may be used as an introduction to the country

to be studied, or some other, equally well adapted, may be chosen. These suggestions are a guide for the teacher and not a course of study to be followed blindly as the race track is by a runner.

Northern North America and Northern Eurasia.
Furs, including sealskins, bear, sable, wolf, ermine.

Southern North America.
Bananas, tropical woods, rice, rubber, cacao, and silver may also be used if desired.

Northern South America.
Coffee, rubber, quinine, manioc, Brazil nuts.

Southern South America.
Hides and meat products.

West Central Europe.
Cheese, wine, embroideries, silk goods.

Southern Europe.
Olives, olive oil, cork, lemons.

Western Asia.
Rugs.

Southern and Southeastern Asia.
Spices, tea, silk, rice, firecrackers.

Northern Africa.
Dates.

Central Africa.
Ivory, palm oil.

Southern Africa.
Diamonds.

Australia.
Wool.

United States Dependencies.
Alaska: Salmon, gold, sealskins.
Hawaii: Sugar, rice, bananas.
Philippines: Hemp.
Porto Rico: Sugar, tobacco, coffee, tropical fruits.

The World as a Globe

In this work a globe should be constantly used, and preferably every child should have a small globe for individual use. The work should not at first be based on a Mercator map, for Mercator maps give wrong impressions of distances and areas. Every region noted should be studied in its relation to the continent in which it is placed, and in its direction from the home community. Distance should be measured in time of passage in days and not in miles.

Each locality treated should be studied briefly as a region where people are living and working, as we are, but perhaps differently because the conditions about them are different. Emphasize the similarity of purpose of life in these regions and at home, and the different ways of doing things. Omit the details, and do not study the countries thoroughly as countries. Emphasize the ways of people that have a geographic reason for being, but omit curious customs and personal racial characteristics. The study of tea should include a study of the Chinese method of living and working, but the vivid impressions left should not be of queues, slanting eyes, loose clothes, and the other features that are usually associated with the Chinese.

The object of the work is to develop an understanding of our relation to the globe. (The fact that the world is a globe must be assumed, for it cannot be developed by any number of imaginary journeys around it. One can go around a city block, a cube, a gas tank, or a rock boulder, but the ability to return to the starting point does not prove the globular shape of the object encircled.) It is not expected that children should study countries as countries at this stage, for that is beyond the purpose of the moment. The summary of the heat belts, and the

relation to these belts of the principal areas of production selected, is the goal to be reached.

Points to be Omitted in Home Geography

As has been already stated, not all the topics that might be included in a given locality ought to be a part of a course of study. Many items are not in the remotest sense geographic in character; others are little worth studying either for their present or future worth; and still others are beyond the abilities of pupils of the third or fourth grade.

Among the topics that are not geographic in character are the names and functions of the officers of the local government; the mechanical details of any trade, like the building of a house, the making of hats, the weaving of cloth; topics in geology or mineralogy that cannot be studied except through museum specimens. Some of these items may need to be studied, but not *wholly*, in the recitation time assigned to geography.

Minerals and rocks are germane only in localities where they may be gathered out of doors and compared. The study of specimens from a distance, gathered in a museum collection, is neither geographical nor valuable at this stage of the work. The development of coal from peat, or marble from limestone, and similar problems which are testing the powers of our greatest investigators, ought not to be presented in a classroom, as if all that were necessary to make coal from peat were peat, some weight, and a hot oven. Such topics can only be memorized, they cannot be understood; and a glib reiteration of the words of a teacher or a text cannot be considered a test of knowledge.

Among the topics beyond the powers of children are the relations of bodies in the solar system, the movements

of the earth, and the theory of storms. The times of sunrise and sunset and of moonrise and moonset involve observations that cannot be taken under the teacher's guidance and that call for study at hours that children of the third and fourth grade ought to be in bed. Such topics should be left until later years, when they can be taught with some degree of satisfaction, though perhaps not as perfectly as might be desired.

These topics are but a few of the many that should be omitted from a course in Home Geography. They are samples which will perhaps be of some value as guides to teachers. The successful teacher of Home Geography must know what not to teach as well as what to teach. The work in the geographical phases of nature study in the earlier grades, and the work in Home Geography, are the phases of geography teaching that present the greatest difficulties to any teacher, no matter how well trained in the subject he may be. A teacher in the upper grades may do fairly successful work with a knowledge of geography which is far less than that necessary for the teacher in the lower grades, who must select, from the myriad of facts and relations about him, those few items which are worth studying in themselves and which give the best preparation for the work of the intermediate years.

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CHAPTER IV

GEOGRAPHY OF THE INTERMEDIATE GRADES

The Importance of Continental Geography

THE work outlined under Home Geography and the World Whole has been carefully planned to give the necessary basis for the more serious continent study which is presented for the first time in the intermediate grades. The pupils have studied their home locality in order that they may have a basis for the understanding of the more distant parts of the earth, and have had glimpses of life and environment in more remote regions in their world study.

The intermediate teacher builds upon this knowledge and attempts to bring within the grasp of the children a fairly comprehensive view of the geography of the world. It is an ambitious undertaking, and one that can be realized only very imperfectly. Whatever is to be accomplished in the study of the continents must be done in the elementary school, for two reasons. In the first place, comparatively few children ever pass beyond the elementary school; and secondly, those who do enter our secondary schools, or even our colleges, receive practically no training in the study of continents and countries. Where geography is included in the curricula in the higher institutions it is for the most part specialized in character, the physical or commercial phases being emphasized rather than a more general study.

Pupils who enter college are painfully ignorant of the very fundamentals of this most important subject,

and there is no reason to suppose that those who leave the grammar school or the high school to enter upon a business career are any better equipped. What is the difficulty, and where should the responsibility be placed? Surely not all upon the grade teacher. The scope of geography is so vast, its interrelations so complicated, that it certainly might be studied with profit through a much longer period of time and at a stage of greater maturity on the part of the pupils than is commonly the case. In many of our schools the subject is completed at the end of the seventh year, and in some cases even at the end of the sixth year. Thus the work is closed just at the age when pupils are becoming sufficiently mature for a really satisfactory handling of the subject.

The fact that regional geography receives such scant treatment naturally places a heavier responsibility upon those grades where it is taught and, among these, upon the teachers of the intermediate rather than of the upper grades, for a large proportion of our pupils never graduate from the elementary school, many of them dropping out by the end of the fifth or the sixth year. The continental study of the intermediate years is therefore the climax of their geography study for these pupils, and hence is of great importance.

What Continents to Teach in the Intermediate Grades

There are many problems that must be considered in outlining a course for this stage, perhaps the most fundamental being that of the scope of the work. How many of the continents should we attempt to teach in the intermediate years? The answer ordinarily given is "All of them," the reason for this decision being the fact already stated that many pupils do not carry their work

beyond this intermediate stage. It is, of course, desirable to teach as much of the world as one can, but the question that confronts us is whether we should teach all of the continents hastily or a few of them well. The answer is self-evident to those of us who believe that education is not simply the acquisition of facts, and that teaching and cramming are not synonymous. The particular facts taught are, after all, of secondary importance, the teaching process being of prime importance.

Continent study offers an unsurpassed field for true teaching. The training involved in the collection of data, in the deducing of principles, in the testing of these principles and in their use, if they survive the test, is of more value than is any amount of verbatim knowledge taken from the text. Instruction of this kind requires much time, but a few of the most important continents, well taught, are surely of more value, both from the standpoint of training and of knowledge, than are all where the end and aim of instruction is the imparting of facts.

As has been previously stated, the continents that should by all means be studied in the intermediate grades are our own, first and foremost; secondly, Europe, with selected portions of Asia, and then, if there be time, South America.

The Two Important Phases of Geography

The purpose of all geography teaching is to present life and its physical environment as graphically as possible. It is generally agreed in these modern days that the physical environment alone is not geography, nor is life alone geography. The interaction of the two constitutes the science with which we are concerned and is its excuse, if it needs one, for existing.

One of the great dangers at this stage of the work is that details of industry or physical features will be overemphasized and that the teacher and the class will wander far from the true realm of geography and will lose themselves in the technique of industry or in the intricacies of other related sciences. In order to avoid this pitfall, the teacher must constantly ask himself the question: Is this really geography, or is it perhaps one tenth geography and nine tenths something else? This does not mean that a teacher may never present to his class material that has not the label of geography attached to it. He may and should borrow from any and all fields whatever he needs to make his point clear or to drive his lesson home. Such excursions into related fields should be for the purpose of strengthening the work in geography and for no other reason. The weakness of much work in this subject lies in the fact that teachers do not limit themselves closely enough to their own line. The time has long since passed when it is safe to unload upon geography "topics that cannot be taught elsewhere"—an old argument for the inclusion of certain features in the course of study, and one that actually carried weight. The geography teacher should bear in mind the fact that his subject is no more responsible for the odds and ends of instruction than are the other subjects of the curriculum, and the good teacher will see to it that one of the best instruments for the awakening and developing of the child is not made worthless through misuse.

The obvious and most interesting phases of geography are related to the industrial life and social conditions in any community. These are the phases that offer the best problems for analysis and study in the intermediate grades. This means that the physical features should be subordinated to the life conditions, not only in degree of

emphasis given to each but in the approach as well, the causes being developed through the study of the related life consequences.

The Method of Approach

The method of approach possible in any section may be well illustrated by the following outline devoted to the topic of ranch life in the West. In discussing the main features of this life—namely, the location of the ranch house, the size of the ranch, the distances that the cattle wander, what they live upon, the life of the cowboys, the round-up, losses in this industry, and other features of ranch life—the children will unconsciously absorb a knowledge of the physical features of the region if the teacher will simply emphasize causal relationships throughout this study. Questions like the following cannot fail to make the situation clear. Why are the cattle allowed to wander such great distances? What does this suggest in regard to the abundance of food? They eat coarse and rather dry bunch grass; what do these facts tell you in regard to the climate? Many cattle die during the winter; can you suggest a reason for this fact? The cowboy lives in the saddle much of the time; do you think you would enjoy that life? Let us listen to an account of one day spent in this way. (A good description should be read by some pupil.) What do you think about it now? What makes it a very hard and dangerous life? Can you picture the country over which the cowboy rides? Describe it.

Pictures should be used freely throughout the discussion in order to make the topic as realistic as possible. At its conclusion the children will have not only an understanding of the life which has been portrayed but

of its determining causes—surface, drainage, and climate. Maps, too, will be found to be essential for this work, but the photograph should be the main reliance of the teacher, showing, as nothing else can, not only the various aspects of the industry under consideration but the physical environment as well. The function of the map is the interpretation of the picture at this stage. Photographs of this region, for instance, will show few streams and scanty vegetation. The map reveals the underlying cause in showing that a great mountain barrier prevents the moist winds from reaching the section, and that light rainfall is therefore to be expected.

In the teaching of any continent, however, one cannot plunge at once into the life or industries there represented. A general view of it in relation to other continents and to surrounding waters, the distribution of the chief highlands and lowlands, and some appreciation of their extent, a familiarity with the great drainage lines and some idea of climate through location in the heat belts, will furnish a background for the detailed study which will follow. This bird's-eye view of the continent may best be given through simple map exercises and is a necessary foundation for the study of life conditions in detail. There is no excuse for the assignment of paragraphs from the text for this work, when all can be read so clearly from the map by the pupil himself. He should be allowed to solve his own problems as far as possible.

How to Divide a Continent for Study

In breaking up a country into sections for study, various methods have been resorted to. The industrial division—that is, into the cotton-growing section, the wheat- and corn-growing sections, the grazing section, and the manufacturing section—has much to recommend it,

for the division is based upon phases of life that cannot fail to interest. There are difficulties in working out the details of this plan, however. In the first place, it is not an easy matter to locate, for instance, the "wheat-growing region," this cereal being found widely scattered over the northern part of the United States. Neither is there a "manufacturing area." In attempting to divide the country in this way it is impossible to avoid over-emphasis of a given industry in one section and too slight an emphasis in another, thus leaving an incorrect impression in regard to its distribution. There is danger, too, of vagueness where knowledge should be definite. Pupils should know the states and their relative positions, but where an industrial unit is substituted for a political unit, the industrial side is frequently developed at the expense of the political. Children are often able to talk glibly about "the cotton-raising section," without realizing the states that compose the section. They frequently know the conditions under which cotton is grown but are hazy with regard to the exact location of the great cotton centers. This result is not inevitable from this plan of study, but it is too frequently the case that the "cotton section," or any other section that may be under consideration, is allowed to cover a multitude of sins on the part of the teacher and half knowledge on the part of the class. Similar difficulties are found in following out any plan that is not based on the political areas that are commonly used.

The "journey method," which when used occasionally is interesting, is adapted only to sections of the world where a bird's-eye view suffices. This method is generally too sketchy to be productive of anything approaching a well-rounded knowledge of a subject or a region. The title itself carries with it the temptation to take a glimpse

here, another one there, or to flit over a region instead of living in it. The result is a smattering of facts too often disconnected and unrelated, where we should have a body of organized knowledge.

Its greatest strength perhaps lies in the opportunity which it offers of so binding together more or less distant parts of a country that comparisons almost inevitably follow. In taking a shore trip, for instance from Florida to Maine, one is very likely to bring out differences in climate, in coast features, and in life. A lesson of this kind is in place occasionally, but as a means of teaching a continent or a country the disadvantages outweigh the advantages.

Another method that is used frequently is the teaching of a country according to types. In this method a striking example of a class is selected and studied in great detail, the object being to make the chosen illustration as graphic as possible. This is then used as a basis of comparison, similar conditions in different parts of the country being examined. For instance, a lumber camp in Minnesota is studied with care. The life and work of the lumbermen, the conditions favoring the growth of the forests, the disposition of the lumber, are all topics of study. When this region is thoroughly known, comparisons are made with the same industry in the Pacific States, in the Southern States, in New England, until a fairly comprehensive view of the situation is obtained. The types selected for study are chosen from widely separated regions, as a coal mine in Pennsylvania, a cattle ranch on the western plains, an orange grove in Florida, a gold mine in California, until finally the entire country has been covered.

In all of this study causal relationships are emphasized, thus teaching the physical as well as the life conditions

that are involved. If this method be adopted, the teacher should choose his types with care. A type is a representative illustration of a class, not an exceptional one, and better results will be secured if this be kept in mind in making one's selection. Not the most complicated center of manufacturing, for instance, should be chosen for study, but one stripped of unnecessary impedimenta, where the dependence of the industry upon determining causes is clearly apparent.

There is one serious objection, however, to the type method when the attempt is made to fit a continent or a country into it. It seldom results in a well-rounded view of the section of the country under consideration, for again one industry or one product is exploited, little attention being given to others. A lumber camp or some other center of industry may occupy the entire foreground when perhaps an iron mine or a wheat farm is of too great importance to be relegated to obscurity.

Those who uphold this plan of teaching expect and claim that such topics may be sufficiently taught through comparison; that when iron mines are thoroughly studied in Minnesota, mining in Alabama may also be taught; that when a wheat farm in California is presented in detail, wheat raising in Minnesota may be introduced, and that thus gradually all of the important features of each section will have been presented. This is undoubtedly true, but the question is a fair one whether topics so presented are an actual part of a given section in the mind of the child. There is no doubt that the one or two types in a region that are actually taught will stand out prominently in that region, but will the section be seen as a unit made up of many interrelated activities, or will the one, or at the most two types taught in any one section stand for that section as far as the pupils are concerned? There is every

likelihood that the latter will be the case; that if a manufacturing city be taught in New England, New England will stand for that industry instead of for manufacturing, for quarrying, for fishing, for agriculture, for trade.

It is our duty as teachers to devise or to adopt some plan which will not only leave a deep and true impression of the regions studied, but which will lose nothing in interest. This condition is met in the industrial consideration of political divisions, each division being studied from various standpoints and with varying degrees of emphasis upon the industries represented. For example, the Middle States of the Atlantic Coast might be studied from the standpoint of manufacturing, mining, farming, and commerce, the first two and the last being considered in detail, farming less intensively; the Southern States from the point of view of agriculture in particular, though also from that of manufacturing, mining, and commerce to a lesser extent, comparisons constantly being made with sections previously studied.

In each section, then, the industries will be seen in their proper perspective, the most important standing out most prominently, but those of lesser importance also being seen as a true part of the whole.

It may not be possible, according to this plan, to study all or indeed any of the important topics in great detail, but it is possible to introduce a sufficient amount to make geographic pictures that may become permanent possessions if the latter part of the work is properly performed. Overmuch detail is deadening and defeats the purpose of the work because the essentials are lost in a mass of non-essentials. The suggestions on the following pages are given as illustrative of the teaching of the sections of the United States according to the plan which has been recommended.

A Suggestive Outline for a Series of Lessons

The Southern States of the Atlantic Coast.

What states are included in this group? Mention some articles of food or of clothing that this section furnishes for us. (If you do not know, the pictures in your geography will give you suggestions. Look at the pictures carefully.) Which industry represented seems to you the most interesting? Tell me some of the things you want to know about it. Let us find out what we can about these points to-day. (Cotton growing has been selected here, though an orange grove, a sugar plantation, or some other industrial feature would be equally satisfactory as an introduction to the region.)

Study the photographs and see what you can find out for yourselves in regard to the appearance of a cotton plantation. (Magazine pictures mounted on cards will answer the purpose if larger ones are not available. The following points should be brought out: the extent of the plantation; how the cotton is planted; the appearance of the plant, its approximate height, its blossom, its fruit; the appearance of the plantation when the cotton plant is in bloom and when the boll is formed.) Describe the life on the plantation as far as you can. Tell about the houses of the people; the work in the field. Why do you think that colored people do so much of this work? (Some member of the class should be asked to read a good description of a cotton plantation.)

Judging from the pictures, do you think that cotton grows better in a level or in a hilly country?

Some of the best cotton is grown in river valleys. What does this tell you about the soil it needs?

In what heat belt is this part of our country? Describe the summer as to length; as to temperature.

Has this section much or little rain? (See rainfall map.)

Describe the conditions under which cotton grows best. (Summary.)

What is done with the cotton after it is picked? (See illustrations.) What does your textbook present on this subject? (Bring out the fact that the seeds must be removed and the cotton put in bales before it is finally shipped.)

Turn to your maps. Mention some cities that you think may be great cotton centers. Why do you think so? (Show the importance of their location in the heart of the cotton region and their favorable positions for transportation.)

Have you found out what you wanted to know about plantations? What are the most interesting things that you have learned? How may the people of this part of the country and the people of New England, for instance, benefit one another?

Other important agricultural products of these states, such as rice and sugar cane, may be studied very briefly, for the region as a farming country is already well known through the study of cotton. The treatment of the other industries of the section should also be brief, for the important ones have been studied elsewhere: manufacturing in New England and in the Middle States and mining in the latter section.

A few suggestions follow for lessons on the more important remaining industries and their relative rank.

What other industries are carried on in this section? (See illustrations.) What articles are probably manufactured here? What can you learn from the illustrations about the changes through which cotton passes before we see it in the form of cloth? (A brief discussion of the process.)

What industry is found here that we studied in the Middle Atlantic States? Can you tell from the illustrations what sort of mining this is? (Work briefly described.) Locate the mining section.

What products are manufactured here besides cotton cloth? What part of this section is particularly adapted to manufacturing? Why? See if you can tell what cities would be likely to carry on this industry.

Which cities would you expect to be important commercially? What products would naturally be shipped from each?

Judging from your knowledge of the physical features of the region, which industry do you think the most important here? Read your text carefully for to-morrow and see if you are right. Is it important that these other industries should also be carried on? Give as many reasons for your opinion as you can.

(Discuss with class the relative importance of the industries of this section and those of other sections studied.)

When the study of the region has been completed, exercises like the following should be given: On an outline map of the United States color in the cotton-growing

section. Make those states darkest where the cotton crop is heaviest. Locate the leading cotton centers, naming each. Show by what routes cotton would probably be sent from the South to New England.

The distribution of some of the other leading products may be shown in a similar manner. The outline maps may also be used during the study of the various products as well as at the conclusion of the work.

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CHAPTER V

THE PRINCIPLES OF GEOGRAPHY

The Importance of the Principles of Geography

THE teacher who attempts to give instruction in geography without a thorough grounding in its fundamental principles will find himself in the position of a blind leader of the blind. The pupils of such a teacher will always find the work "too hard" and the subject a dry one. A thorough knowledge of these principles is needed throughout the entire course, but it is indispensable in handling the introductory matter that usually precedes the advanced study of the continents. This material, so necessary to the understanding of the later continental work and so full of interest, if rightly presented, is usually condensed within a few pages at the beginning of the advanced textbook.

The subject is a difficult one to present in print in such a manner that children will do more than memorize the paragraphs without much regard to their meaning. Much of the work is rather too abstract in its nature to be grasped by immature minds unless it is made concrete and filled with meaning by a teacher who knows both his subject and his children.

The subjects treated in our best geographies in this introductory work are those that are found, for the most part, within the covers of our physical geographies, though necessarily greatly condensed. The following topics suggest the nature of the work:

The Earth as a Globe.

Form, size, motions, latitude, longitude, seasons, zones, varying length of day and night.

Atmosphere.

Climate and weather; temperature, winds, rainfall.

Ocean.

Currents, waves, tides.

Lands.

Plains, plateaus, mountains, volcanoes, shore lines, rivers, glaciers.

Life.

Distribution of plants, animals, man.

No more interesting matter can be found within the textbook than this, if it be well presented.

The Earth as a Globe

The first topic, the earth as a globe, has for an indefinite period been a bugbear to pupils and teachers. This could not be otherwise, and cannot be so to-day except in cases where the teacher realizes that his function is to teach, not to hear recitations. Children cannot learn this work from a textbook; indeed, few college students can do so. The facts must be developed by the teacher, his presentation being based upon simple observations made by the pupils and upon pieces of apparatus or other graphic means of representation. Much of the difficulty in this work lies, too, in the fact that teachers too often lose sight of the definition of geography in this part of the course—that it consists not merely of earth study but of the relations of life as well. This cannot be too strongly emphasized where the physical facts are so difficult to visualize. A rotating, globular earth traveling in space about the sun is not a simple conception for the mind of a child. It is surely advisable to throw the emphasis upon the influence of this globe upon our lives. For years we have taught the form of the earth, the really conscientious teacher, perhaps, insisting that we live

upon an oblate spheroid. We have taught proofs of the shape of the earth, usually inaccurately it is true, for most of the proofs given in our own textbooks show only that the surface of the earth is bounded by curves—not that the curvature is practically equal. We have thus attempted, though with indifferent success, to show that the earth is a globe. We have not led the children to realize the more important fact that its form is a matter of moment to them.

The shape of the earth resulting in a practically equal pull of gravity at sea level the world over, is certainly worth mentioning. Our commercial relations are based upon this fact, for equal gravity means equal weight of a given mass. It also means equal average density of air at sea level, which is important to us for many reasons, and particularly that man is thus adapted to live in any latitude.

Rotation. The influence upon our lives of a rotating globe is equally interesting. We are all familiar with the fact that rotation gives us day and night. Attention should also be called to the fact that the period of our day is one earth's rotation; that the period of noon, when the sun is highest in the sky, when shadows are shortest and point to the north in our latitude, is also a result of the rotation of the earth, for the sun is then passing from the eastern to the western part of the heavens.

Every teacher will realize the importance of stripping latitude and longitude of their unreality and of revealing them as a natural method of blocking off the globe by imaginary lines by means of which we may locate places exactly as we locate a house at the intersection of streets. The use of latitude and longitude may be shown by placing a dot on a slate globe without lines of any kind, the children being asked to locate this point on their maps. When

this is seen to be impossible, parallels and meridians may be drawn and the directions repeated. If the time-honored spelling match be set aside occasionally and a latitude and longitude game be substituted, as, "I live in 20 degrees north latitude and 10 degrees east longitude; about where is my home?" the children will soon cease puzzling over which one is north and south and which east and west, and will realize that the subject was not invented primarily for their mystification.

Revolution. The subject of the revolution of the earth cannot be taught too carefully. Here again textbook work is useless until the subject has been developed step by step in the most painstaking manner. In no part of the course is apparatus of some kind more necessary, for much of this work is beyond the child's power of visualization unless it be reduced to tangible form. A good season apparatus is desirable for this work, but it is by no means indispensable. The essential thing is to show by means of a globe that travels about a sun, perhaps a globe carried about a lamp by the teacher, that the constant parallelism of the inclined axis causes first one hemisphere, the northern, and then the other, the southern, to be inclined somewhat toward the sun, while the opposite hemisphere is turned away. This must be clearly shown in order that change of seasons may be taught, one of the most important results of the revolution of the earth, and that the difference in length of day and night, puzzling because usually poorly presented, may be understood.

It is not difficult to show children that at the equinoxes, March 21 and September 22, when the rays of the sun are vertical at the equator, the circle of illumination must cut the earth at the poles and that therefore at this time day and night must be of equal length all over the earth. When this point is actually grasped, it may readily be

shown that when the vertical rays strike 23½ degrees north latitude at the Tropic of Cancer, the lighted hemisphere must shift an equal amount, the circle of illumination then falling exactly 23½ degrees beyond the north pole and the same distance short of the south pole. If it be shown that the circle of illumination again, and in fact always, bisects the equator, the reason for the equal day and night throughout the year at the equator will be apparent.

The chief difficulty which the teacher will encounter in this question of light distribution is in drawing the distinction between length of day and night at the polar circles and at the poles. A very simple piece of apparatus will suffice to show that the Arctic Circle is flooded with light *for one day only* in the year—June 22—when the rays of the sun are vertical at their most northern point, the Tropic of Cancer, and when the circle of illumination falls farthest beyond the north pole, completely covering the Arctic Circle. We may show by means of the same piece of apparatus that the light reaches the north pole at the time of the spring equinox, March 21, and that the pole remains in the light during the progress of the circle of illumination beyond the pole to the Arctic Circle on June 22, and until its return on September 22, thus giving a six months' day at that point but at no other spot on the earth except at the south pole at the opposite season.

Various devices may be used to illustrate these points. A paper cap representing the lighted portion of the globe, exactly fitted to a hemisphere, will be found very satisfactory. Its edge (the circle of illumination) extending from pole to pole will represent light distribution at the time of the equinoxes. Slipped beyond the north pole 23½ degrees, length of day and night over the earth at the summer solstice will be shown, while an equal shifting

beyond the south pole will represent the length of day and night during the winter solstice, December 22. If light distribution be thoroughly understood for the northern hemisphere during our summer solstice, the teacher will have no difficulty in showing that those conditions are duplicated in the southern hemisphere during our winter solstice, and that the proportion of light in one hemisphere is balanced by an equal amount of darkness in the other.

In this work on light distribution, whether at the equinoxes, at the summer solstice, or at the winter solstice, the teacher should be sure that the pupils are clear on the three following points: first, the position of the vertical rays; second, the position of the circle of illumination; and third, the consequent length of day and night at various latitudes over the earth.

Two points should be emphasized in presenting the subject of zones: that they are primarily belts of light distribution, not heat belts, and that their width is determined by the inclination of the earth's axis. The inclination of the axis being 23½ degrees, it is not difficult to show that the torrid zone must necessarily be 23½ degrees wide on each side of the equator, the vertical rays of the sun moving north and south in accordance with the amount of the inclination, and that the frigid zone will also be 23½ degrees in width, the circle of illumination falling 23½ degrees beyond or short of the poles at the time of the solstices, thus marking the boundary of these zones. The children may discover for themselves the width of the intervening space, the temperate zone, by finding the degrees unclaimed by the torrid and the frigid zones.

The pupils' comprehension of this subject may easily be tested by tilting the axis at imaginary angles—30 degrees, 45 degrees, or perhaps with no inclination from

the perpendicular—and allowing the class to decide upon the number and width of the zones in each hypothetical case. If the preceding zone work has simply been memorized, they will be helpless with a problem of this kind to solve; if each step has been thought out, however, they will need little assistance in making this new application of their knowledge.

Climate

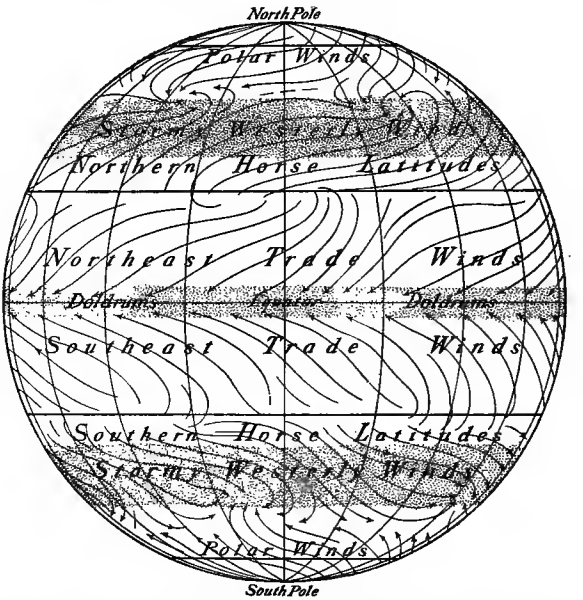
Under climate the most fundamental topic for study is temperature. The isothermal maps naturally form the basis for temperature work. The following points are among the most important: the comparison of land and water temperatures in similar latitudes for winter and summer in both the northern and southern hemispheres; the comparison of coasts and interior; the amount of variation between the equator and the poles; the comparison of summers in the southern hemisphere with summers in the northern hemisphere; the comparison of winters in each hemisphere; the study of the average yearly range of temperature in the northern and southern hemispheres and the location of the heat equator.

Reasons for conditions found and for differences where comparisons are made should invariably be called for. The topic that naturally follows, that of the winds, is stripped of much of its difficulty if it be developed step by step. The diagram that follows, with the accompanying brief explanations and questions, covers the chief points to be presented.

Describe the temperature of the air at the equator. How will this heated air move? Why? After it rises it starts for the poles. Describe the temperature when it has reached "middle latitudes." How will the air then move? Where

the air descends there is much air, or "high pressure."

Where there is less air there is "low pressure." Can you mention one region where the pressure must be low? (The teacher will be obliged to tell the children that pressure is low at the poles



The wind systems of the world 1. Equatorial calms or Doldrums. 2. Northeast trades. 3 Southeast trades. 4, 5. Tropical calms or Horse Latitudes. 6. West-south westerlies. 7. West-north westerlies. 8, 9. Circumpolars.

as well as at the equator.) If there is much air in one region and less in another, what will happen? How then will this air move? Try to draw a straight line on this rotating globe from

the pole to the equator in the northern hemisphere and in the southern hemisphere. Describe your lines. As the air moves equatorward and poleward, it is deflected to the right in the northern hemisphere and to the left in the southern, just as were your lines on the globe, due to the rotation of the earth, giving us the circulation outlined above.

This diagram, which illustrates the approximate distribution of the winds during spring and fall when the heat equator is near the mathematical equator, may be drawn step by step during the development of the subject, the children doing the work themselves. This work may be carried a little further, for the system as outlined is not unmodified throughout the year. If the foundation has been well laid, however, the next stage will present few difficulties. The following suggestions are given for July and for January:

Winds for July. Is the heat equator always close to the mathematical equator? Where is it in July? Draw it. Show me where you think the northeast trades will stop. Why do you think so? What must the southeast trades do? What will be their direction as they cross the mathematical equator? Why?

You have seen that as the heat equator moves northward the southern trades are drawn northward across the mathematical equator. All of the other wind belts are likewise affected, shifting slightly to the north. Find the belt in the northern hemisphere that has tropical calms in spring and fall. What winds will you find here in July? What winds will you find in the corresponding belt in the southern hemisphere? (As

the various points are discussed they should be represented in diagrams as before.) Complete your diagram, showing the position of the remaining wind belts.

The same method of procedure may be followed in teaching the winds for January. When this has been done a comparison should of course be made.

What winds or calms are found close to the equator in spring and fall? What winds lie directly north of the equator in January? in July? How do these winds compare in direction? We call winds that blow from opposite directions during the warmer and cooler parts of the year monsoons. Do you find any other monsoons in this vicinity? From what directions do they come? (Particularly striking winds of this class, such as the monsoons of India, may also be presented here.) In what other belts do the winds change? Name the winds or calms that we find in each of these belts in spring and fall; in January; in July. What winds have they both during their summer? What winds during their winter?

The preceding suggestions are given simply as aids in teaching the fundamental circulation of the atmosphere and the modification resulting from the shifting of the heat equator. Lessons should follow on the characteristics of the various wind belts and the distribution of the leading countries of the world in these belts.

The teacher will feel repaid for a careful development of this topic, for he will find it necessary many times to draw upon the children's knowledge of winds both in their later continent work and in the study of rainfall and its distribution as well.

Rainfall

Under rainfall the most important topic to teach is its distribution and its influence upon life. For this work a map showing the distribution of rainfall over the world is necessary, together with physical maps for purposes of location. In order to explain the rainfall of any section the wind belt in which the region lies must be known, its situation with reference to the sea, its altitude and its position with reference to adjacent highlands or lowlands, and something in regard to its temperature. In class work on this subject children should be required to state the chief cause or causes for the amount of rainfall in each section studied. For instance, in the case of the northern part of the western coast of the United States the heavy rainfall should be explained as due to the fact that the region lies in the westerly wind belt on the windward side of the mountains, while Kalahari, in southern Africa, is a desert due to its location in the southeast trade-wind belt on the leeward side of the mountains. Sometimes temperature is the controlling cause, as in north-central North America and in northeastern Asia, where the low temperature results in "cold deserts."

The regions conspicuous either for heavy or for extremely light rainfall (deserts) should be studied carefully, as well as the distribution of precipitation in our own country. Pupils should be allowed to work out for themselves the relation between rainfall and industries by locating some of the great agricultural lands of the world and noting the amount of rainfall in each region, and by comparing the rainfall of the grazing lands and the lumbering districts with that of the agricultural and other sections.

Weather

Surely no topic under the atmosphere has a greater claim for an important place in the course of study than has the weather. It is difficult to make certain portions of geography clear to children, for we are forced, from the nature of the subject, to deal with many topics so remote that only by illustrations and careful word pictures can we hope to show the region approximately as it is. In the case of the weather, however, our material is not only at hand but presses upon us so closely that we are in danger of mistaking familiarity for knowledge. The laws governing the weather are not beyond the comprehension of upper-grade classes and not only repay study from the standpoint of the teacher but from that of the pupils as well. The latter soon form the habit of consulting the weather map in order to see whether "To-morrow will be a good day for the game," or to get help in deciding as to the advisability of planning out-of-door excursions of various kinds. In order to understand the weather changes of temperate latitudes it is only necessary to make a study of what are called low- and high-pressure areas for, as we shall see, these areas control our weather, sweeping alternately across our country, one succeeding the other with almost no intervening conditions. In other words, we are almost constantly under a "high" or a "low," escaping from the characteristic features of one only to plunge into those of the other.

The definite study of "lows and highs" should be preceded by the keeping of weather records during typical spells of weather. Late fall, winter, and early spring furnish the best conditions for weather study. The pressure, temperature, wind direction, state of the sky, and precipitation should all be noted. The most conscientious

record of weather conditions is of little value, however, if no further use is made of it, as is too often the case. The relationship between wind direction, state of the sky, and precipitation should be observed. A cloudy or actually rainy day should be chosen for the first work on lows. The barometer should be read, wind direction noted, the state of the sky and precipitation observed. When clearing begins, the same observations should be made. It will not be long before a low-pressure area will stand in the minds of the pupils for stormy weather, while a high, when studied with the same care as the low, will mean clear weather. The weather map should now be introduced, and a further study of lows and highs should be made. The size of the areas should be noted approximately, the distribution of pressure—that the low is lowest in the center, while the high is highest at the same point—the direction of the prevailing winds with reference to the center, the state of the sky in each area, and the distribution of precipitation. If successive maps be used, the paths of lows and highs across the country may be seen and the rate of movement per day ascertained.

From the study of the daily map the children will thus be able to make simple weather forecasts, knowing the position of these areas in the United States, that they move from west to east, and that their rate averages approximately seven hundred miles per day. When the pupils are fairly familiar with the weather map, problems like the following may be given to test their understanding:

> The country to the east of the Rocky Mountains is under a high-pressure area, while the region about the Great Lakes is under a low. Forecast the weather for the next twenty-four hours for the Great Lakes and the Atlantic coast.
>
> A low-pressure area lies directly west of New York

City. Describe the weather changes during its passage over the city in regard to wind direction as it approaches and passes; state of sky; rainfall.

The Ocean

The study of the ocean, after a brief, general treatment in regard to its proportionate area as compared with that of the land, and the distribution and extent of continental shelves, falls naturally into three divisions: waves, tides, and ocean currents, only one of which, ocean currents, is of great importance in grade work. The elliptical movement, or the eddy, in the heart of each ocean, is the most striking feature in the distribution of the currents. The directions of these eddies may best be taught from maps showing the distribution of the prevailing winds. Each pupil should be furnished with an outline map of the world, on which he should represent, by means of arrows, the winds of the various oceans, the work affording a review of that previously done on winds, the teacher aiding by questions where necessary. When the winds are shown, let the pupils swing their pencils lightly over the various oceans, showing how the waters will be driven. Arrows may be placed on the ellipses so drawn in order to show the direction of movement in each ocean. The current maps should be completed and any necessary corrections made by referring to the map of ocean currents given in the textbook.

Cold currents may be differentiated from warm by some simple device, that their distribution may be seen at a glance. Separate outline maps should be used to represent the currents of the North Indian Ocean for January and for July, that the change in direction in accordance with the seasonal reversal of the winds may be shown.

The currents of each ocean should be described, the important points in each being noted. In the North Atlantic Ocean the main points to be emphasized are as follows and may be taken as a guide in the description of the currents of the other oceans: the direction of the main eddy from left to right; the westward direction of the equatorial portion of this eddy until a land barrier (the West Indies) is reached; the resulting division of the water, the main portion being deflected to the right to complete the eddy, while a small portion runs into the Caribbean Sea and the Gulf of Mexico, issuing forth through the narrow Florida Straits as the Gulf Stream; the Gulf Stream, flowing as a true stream to Cape Hatteras only, where it broadens out, becoming a drift, crossing the Atlantic as a part of the North Atlantic Drift; the chilling of the currents as they are carried far northward and the return of a portion of this water in the form of cold currents, namely, the Labrador and Greenland currents.

An important topic and one that is usually incorrectly taught is that of the influence of ocean currents upon climate and so, indirectly, upon life. Care should be taken not to overestimate the influence of currents upon temperature. It is a fallacy to teach that the temperature of the British Isles is *due* to the Gulf Stream. Two errors are involved in this statement. In the first place, the Gulf Stream as a stream practically ceases at Cape Hatteras, and in the second place, the North Atlantic Drift does not *make* the climate of the British Isles. That their winters are much warmer than those of Labrador, a country in the same latitude but on the opposite side of the ocean, is due primarily to their western coastal position, the westerly winds thus bringing them the warmth of the whole ocean mass. In other words, if there were no Gulf Stream western Europe would still be much warmer

in winter than would eastern North America in the same latitude. The North Atlantic Drift is, however, an element in influencing the climate, though it is not the greatest one.

Little should be attempted with the subject of tides in elementary-school work. Their ebb and flow, resulting in two high tides and two low tides in a little more than a day; the tidal range, slight in the open sea, strong in funnel-shaped bays; the influence of tides upon navigation, and other facts relating to the subject that are not too difficult of comprehension may be presented, but the explanation of the cause of tides should be reserved for secondary-school work or perhaps better for colleges. There is little need for this subject in continental work, except in connection with harbors and navigation; so for this reason, too, little time should be given to it in a course that is intended primarily to prepare for regional work.

For the same reason it is unnecessary to devote much attention to the subject of waves except as they are instrumental in modifying shore forms. Their work in the building of off-shore beaches, thus forming protected waterways and affording favorable locations for summer resorts, is an important element in determining occupations in many coastal regions.

The Lands

The largest and perhaps the most significant topic of this elementary summary of the important topics of physical geography remains to be considered—that of the lands. We may take up the various land forms, developing them, step by step, as in the preceding topics, or we may pursue this study in connection with continental work, deferring the study of a given land form until it is needed in connection with a country.

For instance, instead of studying the various classes of plains—as coastal, alluvial, and lake—under the general topic of plains, we may study the first when we take up the coastal-plain portion of the United States, alluvial plains when we reach the Mississippi Valley, and lake plains in connection with the Great Salt Lake region. The latter seems the more advisable method of procedure, both from the standpoint of the study of the continent and from that of the study of the particular land form. Continent work is strengthened by a careful consideration of the physical features of the region under consideration, while the treatment of the land form will surely gain through the many associations which necessarily result from this method of study.

It may be argued that if land forms are better treated in connection with continent work rather than as separate topics, the same must be true of many or all of the preceding subjects. Practical experience, however, shows that this is not the case. Many of the topics which must be taken up in the study of a region are parts of a much greater whole and are so inextricably bound together that the whole must be developed in order that the parts may be understood. This frequently involves too great a digression in the study of any region to be practicable. For instance, in studying northern Africa the winds of the region must be considered. The winds of this or of any one section cannot be explained without going into the whole question of atmospheric circulation, thus making a serious break in that closely interwoven body of knowledge that a particular region should symbolize. This difficulty does not present itself in the case of land forms. We may study coastal plains without going into the whole subject of plains, thus keeping closely to the particular region under consideration.

The details and generalizations associated with land forms are sufficiently clearly outlined in most textbooks so that itemized suggestions need not be given here. Whether the sections on river valleys, soils, mountains, and other subjects are studied as things by themselves or in association with the later continental work, the general relations to life outlined in the texts comprise the main topics to be emphasized. The land forms may be pictured more readily than the larger features of climate, and hence offer few difficulties to those teachers who know the subject.

The Distribution of Life

The same argument applies to the treatment of the last topic included under "principles"—the distribution of life. Here again there is no reason against and many in favor of studying life in connection with a particular environment. In the general study of a continent, for instance, that ordinarily precedes the more detailed work, an excellent opportunity is afforded for the study of the flora, distribution of the fauna, and the people of that portion of the world as compared with the world as a whole.

The distribution of plants over the world is a subject that deserves more careful treatment in school geography than do the other topics usually included under "life," for the distribution of mankind is vitally associated with plants, either directly or indirectly. The types of mankind and of civilization seen in the tundra region, on the deserts, in tropical forests or temperate forests and grass lands vary with the plant and climatic surroundings in each case. Just as any continent should be studied as related to the wind systems, so should it be placed in the plant realms, in order to give the proper background for the study of social and economic conditions in a causal way.

The distribution of animals as great groups and of mankind by races is of less consequence as a point of departure in continental work. These broad groupings may be well brought in as summaries of the continental work.

The elements of commerce and trade, now included as a part of the principles of geography, deserve special emphasis in the treatment of a continent, for the commercial relations are the climax of the study. The modern interest in the commercial side of geography is so great, and the topic is so important from an educational standpoint, that it will be considered in detail in a later chapter. (See p. 164.)

Summary

The principles of geography as briefly outlined above are necessary tools in any study of a continent. Some of them must be studied before the advanced treatment of the continents, to give a proper basis for continental work. Other phases may equally well be studied in association with the several continents and used as summaries for bringing together the generalizations reached in the study of the different continents. These principles are usually placed together at the beginning of the larger geography to show their proper position in the course as a whole and that they may be equally well used in the study of any of the continents. In practice, however, the good teacher will develop some of the principles in the later intermediate work and the earlier advanced work, and will use the text presentation as a summary and source of reference.

For instance, the study of the distribution of plant regions as related to rainfall and temperature, and the dependence of these on the relation of the earth to the sun at different seasons, can be beautifully worked out through

a study of South America and Africa. The movement of the wind systems, their relation to the distribution of highlands and lowlands, the consequent rainfall, drainage conditions, and the resulting social conditions are nowhere better seen than in Australia. Thus the principles, if rightly taught in part as summaries of the intermediate work, in part as points of departure for the advanced work, and in part through the continental study, should offer no bugbears either to pupils or teachers. The principles form a necessary part of the course and must be treated as such and constantly used and applied. They are not a preface to be read and then laid aside until the next year.

REFERENCES

Redway, J. W., *The New Basis of Geography*, Chapter VIII; Sutherland, W. J., *The Teaching of Geography*, Chapter II; Archer, Lewis and Chapman, *The Teaching of Geography in Elementary Schools*, Chapter X.

CHAPTER VI

GEOGRAPHY IN THE UPPER GRADES

The Point of View

THE teaching of geography in the upper grades is generally identical with that of the lower, except that more detail is introduced. In many cases all of the continents are studied briefly in the intermediate grades and repeated in the grammar grades with additional details, largely brought in as memory work. There is no particular incentive to work under these conditions. The novelty and freshness have been destroyed by the earlier work, and the pupils feel and say that they "have had that," and therefore evince little eagerness for a repetition. Their desire for "something new" is a perfectly normal one and should be met by the teacher. Neither does this method of work take into account the increased ability of children of the sixth and seventh grades over those of the fourth and fifth. This is a quantity that must be reckoned with if our subject is to be a power in the development of the pupils.

In the earlier grades, as has been suggested, the life conditions, especially the industrial conditions, should be studied in detail, the physical causes being sought simply as an interpretation of these life conditions. We should work from effects back to the controlling causes. In the upper grades the process should be reversed for the most part. The physical should be studied with care, while life conditions, culminating in a consideration of commercial relationships, should be seen as a consequence to be expected under the existing physical

influences and controls. In the first study of the continents we have slowly accumulated data and arrived at tentative generalizations. The advanced work is for the most part a testing and further application of these principles.

The Emphasis to be given the Physical Features

In the advanced work on New England, for instance, its surface, composed of upland, highland, and lowland, as well as the more superficial features, should be studied. The teacher, if he is an enthusiast in his science, may even go back a step farther and explain to his class the origin of these fundamental forms. He may, if he wishes, go so far as to teach the somewhat difficult subject of peneplains—the wonderful leveling of the whole region until it was brought practically to the sea, with the exception of occasional masses, the monadnocks, which for various reasons were never reduced so low; its later uplift and the accompanying revival of the streams, resulting in the lowlands of the present time, the uplands or the old peneplain with the even sky line giving an indication of its history, and the highlands or monadnocks overlooking all.

This suggestion may not meet with universal approval, for an understanding of this topic is necessary neither for the passing of examinations nor for earning one's living, but a teacher misses one of his greatest opportunities if he fails to open his pupils' eyes to the marvelous works of Nature and to broaden their minds by an occasional vision of her results.

The other physical features as well will be found to be equally worthy of study. The drainage of New England, with its many lakes, falls, and rapids, can be explained

only when the work of the great glacier that once covered North America is understood. The soil with its many bowlders is again largely of glacial origin and can be accounted for only by at least touching upon the changes brought about by the great ice sheet.

The irregular shore line is another feature that should not be merely noted but should be explained, especially in regard to its significance in the industrial development of the region.

Climate should be studied in detail, summer and winter temperatures read from isothermal maps, prevailing winds and storms explained, and the distribution of rainfall noted. At the conclusion of this work the pupils will certainly have an intelligent opinion as to the industries to be found in this section, for in studying the life of the various parts of the globe in their earlier continent work the constant seeking for physical controls and influences must have resulted in the association of a certain industry with one environment and other industries with a different environment. In other words, principles must have been deduced which are ready and waiting to be applied. Pupils will see at once that falls naturally lead to manufacturing; that while farming would be carried on in the lowlands, the bouldery character of the soil and the hilly aspect of the country make it difficult, and that farms would necessarily be smaller where so much of the labor must be performed by hand. Fishing and commerce would without doubt be prophesied along an indented coast, and some form of mining, in this case quarrying, would naturally be expected in the mountainous sections. The significance of the location of small harbors in New England, as related to the manufacturing centers, is of extreme significance in understanding the importance of the large ports of New York and Boston.

How to Study an Industry

The industries are not simply mentioned, however. They are again studied, though in a broader manner, and in less detail than in the earlier work; for, as has been suggested, the emphasis in the upper grades is upon the physical, and upon the influence of the physical, in shaping the life of these regions rather than upon the details of life itself.

The following suggestions for teaching agriculture will indicate the character of the work on industries for this stage: The pupils should be asked to indicate the regions where agriculture would naturally be carried on, their conclusions being based upon their knowledge of physical conditions. The conditions favorable and unfavorable for the industry should be stated, emphasizing on the one hand the comparatively high temperature of the growing season, its length, the abundance of rain together with its distribution throughout the year, the percentage of sunshine, and the fertile character of glacial soil. On the other hand, the difficulty of carrying on agriculture in a hilly country and the stony character of the soil will be seen to be sufficiently serious drawbacks to lead the people to turn their attention mainly to other industries.

Small farms will be expected in a section of comparatively steep slopes, where work cannot be done on a large scale with great machines as is the case on the western prairies. The products that can best be grown under the physical conditions found in the locality, and the disposition made of them, should be noted.

The various industries of the section and the part that each one plays in the commerce of the country, and of the world, where of sufficient importance, should be emphasized, the important towns being located in connection with the industry with which they are associated.

The Necessity of Presenting Real Problems to Pupils

Although the physical is of great importance at this stage, the teacher should not make the mistake of presenting it as an end in itself. It has no place in school geography except as the determining cause of existing life conditions, and should be taught with the life constantly in mind. This result is best secured by placing before the pupils a problem full of human interest really worth solving, and which may be disposed of only through the study of the physical features. This binds together, as nothing else can, the physical and the human and serves the further purpose of transforming desultory work into true effort. Teaching a region by means of a problem to be solved has another and an equally great advantage. Pupils will go through the routine of the position, surface, drainage, and climate of a section and get very little knowledge as the result of their effort. If, on the other hand, some problem is presented that they can solve only by knowing these facts concerning the region, they will not only attack their work in a very different spirit but will have a central thought which will bind together all that they learn. It is this that makes it of vital importance to put an aim or a problem before a class; not so much to hold the attention—a good teacher will do that without stating a specific purpose—but in order so to relate the facts presented that they will become a permanent possession rather than a collection of unrelated items that are no sooner learned than they are forgotten.

A Problem Lesson Outlined

Suppose that the steppe region of central Asia is to be taught. Instead of simply studying the various physical

features for no reason except that they are told to do so, let the pupils find out why the people of this part of the world have no settled homes. Every point ordinarily taught will be found to revolve about this question. The various physical features will naturally be examined in succession in the effort to find a reason for this mode of life. It will be seen that the people live on extensive rolling plains, that the seasonal temperature changes are great, winters cold and summers hot, that the rainfall is scanty and unevenly distributed throughout the year, that, in consequence, vegetation is sparse, agriculture is difficult to carry on, and the people are forced to seek a livelihood from flocks and herds. The scarcity of fodder leads to a nomadic life, because it is necessary to drive the herds from place to place in search of food, as the scanty pasture grounds are successively exhausted.

The principal features of this region, when studied in this manner, will certainly make a more lasting impression than where the usual method is followed.

Maps as the Basis of the Work

It is evident that in this work the map must be the main reliance of the teacher, and his first duty is to become so familiar with this method of portraying a region that he will be able to lead his pupils to read a map as easily and as truly as they read a printed page.

While it is customary to make use of physical and political maps to some extent, their real significance is rarely appreciated. They should not be regarded, as is so generally the case, as supplementary to the text. On the contrary the text should be a summary and a supplement to the map. Before geography can be well taught the usual method must be reversed and the map, not the text, be made the basis of the lesson. If this method of work

were adopted, geography in the schools would be revolutionized. There would be no more dull, uninteresting recitations that accomplish little or nothing. Children would no longer attempt and fail to learn their lesson because the assignment was utterly beyond them or because their interest was not aroused.

The strongest argument for map work is found in the fact that the responsibility for acquiring information should be thrown upon the children as far as possible. Why should they be permitted to take from the text what they may discover for themselves? This is poor pedagogy, and poor geography teaching as well, even if by the teaching of geography we have in mind only the imparting of information. It would be interesting to test classes at the close of a term's work, instruction in the one case having been based on the text, in the other on maps.

Practically all the larger facts that the best textbooks contain may be read from the accompanying maps. The distribution of surface features is certainly more graphically shown in this manner than by means of the printed page. Climate, too, may be worked out in much or little detail from maps which show the distribution of climate. In studying the climate of any country, pupils should be taught to refer to isothermal maps for summer and winter temperatures and for seasonal differences between coasts and interior. They should not only consult the rainfall map in order to learn the amount of precipitation, but wind and surface maps as well, that they may understand the cause of the scanty or plentiful supply, as the case may be. Knowing the physical and climatic conditions, life relations, too, may be read from the map, industrial centers located, and routes of trade traced. All the maps needed in such a method of study are available in the modern school texts and should be used constantly.

An Illustrative Outline

The following suggestions on Norway are given to show how a region may be taught largely through map reading.

Norway.

What countries have we studied that lie far to the north? Mention some people who live in this northern region. Describe their life, the climate. To-day we shall study another country that is found far to the north. Find Norway on your maps. What is its latitude? Compare it with Greenland. What do you know about Greenland? (Some pupil should have been asked to tell the class in a few words about the great glacier of the interior, or to read a short description of Greenland.) Let us find out how many of the people of Norway make their living. Do you think it is as cold as it is in Greenland? Why not? Turn to your isothermal maps. What is its January temperature? What is the January temperature of Greenland? What part of the eastern United States has the same temperature as Norway? What part of western Europe? How does the winter temperature compare with that of your own home? Can you think why their winters are so much milder than in other countries in the same latitude? What is their July temperature? Is the summer warm enough to raise crops? Is it warm enough in Greenland to do so? Do you think they have much rainfall in Norway? Why? (See physical map.) Where would you expect to find it heaviest? Turn to your rainfall map and see if you are right. How heavy is it? Find other

places you have studied that have about the same amount.

Look at the physical map again. Describe the surface of Norway. About how high are the mountains? Compare the amount of lowland and highland. What other mountainous countries have we studied? Describe the western coast. Can you tell me why it is so irregular? Let us try to imagine how the country looks. (Study and discuss photographs, that the beauty of the region may be appreciated.)

Summary of temperature, rainfall, surface, coast line. What important occupation would you expect to find in a rugged country like Norway, where the temperature is high enough for vegetation and where rainfall is heavy? (Lumbering discussed, and a short description of it read.) Look at your maps. What are probably the leading cities in the lumber trade? Locate them.

What important industry does the irregular coast line suggest? What does your textbook tell you of the Lofoten Islands? Judging from the position, what cities are probably interested in the fishing industry? Locate them. What have you found out about the way a large number of the people of Norway make their living? Did you expect this, or did you think they would live as the inhabitants of Greenland do?

Turn to your reference tables at the back of your geographies. (Commercial tables.) Is either country important to the world commercially? In what respects? To what extent?

Read your text on Norway for to-morrow. The boys may bring in all the additional information

that they can find on the people and their industries, the girls on the scenery.

The Use of Maps in Association with Texts

In addition to the map study which has been discussed, much map work, with the outline or a rough sketch as a basis, should be required of the pupils. A great variety of features may be represented in the study of various countries. Surface and drainage, the distribution of rainfall, isotherms — where the distribution of temperature is unusual, as in Norway — products and cities, density of population — where it is either especially dense or sparse — and finally routes of transportation.

Perhaps only two or three features will be shown for any one country, the most important of course being chosen. Occasionally these may be shown on one map, though results will usually be better, and much less confused, if more space be taken, except in cases where topics are naturally associated, as are surface and drainage, or products, cities, and routes of transportation. Map work of this kind is exceedingly valuable in order to fix in mind the important points of a country, as a means of review, and later on as a test of the knowledge which the children should possess.

Although too much use can scarcely be made of maps, the teacher should not go to the extreme of limiting himself wholly to this method of instruction. While it should form a very substantial part of the work, no one method is sufficient unto itself. Photographs should be used in abundance, that the map may actually represent land and water to the children. Otherwise there is danger that the Mississippi River will exist in their minds perhaps as a black line and New York State as a green patch. It is a good plan to call for word pictures of the region under

consideration, occasionally, as, "Describe the Sahara Desert as you imagine it." Much supplementary reading, too, should find a place in the course, that those details of life may be supplied which are so necessary in making the picture of a region complete.

The importance of map work has been so strongly urged that at first sight it may appear as though the text were necessarily relegated to obscurity. The method advocated, however, does not in any way supplant the textbook. On the contrary, if the work is to be successful, constant and intelligent use must be made of it. Textbooks make available valuable tables of reference which should be used in practically every lesson. Teachers as well as pupils are too often ignorant of the amount of information that these last pages offer. A careful study of this portion of the book will amply repay the teacher and will suggest innumerable applications to his work. These tables should be used constantly in connection with map work. For instance, when mountainous regions are studied the pupils should turn to their reference tables and find the altitudes of the highest peaks. When the length of some great river is measured, these tables should again be used as a means of verification.

No feature of the textbook is of greater importance than are the diagrams found in some of our best books, showing graphically the rank of the leading countries of the world in the production of the important commodities. In this day of practical, utilitarian knowledge, commercial geography must take a prominent place, and material for its study should be accessible to every pupil in the grammar grades. Apart from these various tables, the text should constantly be used as a source of reference. Pupils should verify their conclusions by consulting it. It should represent and should be used

by them as a brief summary of the information which they have obtained through their own efforts and should form one means of review.

The Continents to be Studied

In the elementary study of the continents it was found impracticable to consider each continent in detail, and a selection was therefore recommended. In the upper grades, however, all should be studied, those of greatest importance to us at much greater length than those of less importance. It is not an easy matter, however, to slight any of them, for the two that would naturally receive the least attention, Africa and Australia, show so clearly the interdependence of the various climatic elements and the strong control of the physical over life, that for the sake alone of the logical training which this study involves, these continents are well worth considering in some detail.

In the advanced study of the continents, as in the more elementary, a general survey of the region as a whole should precede the detailed consideration of countries or of sections of a country. Here again it is not advisable to study the physical features for the sake of the physical alone, but rather as a necessary preparation for the interpretation of the larger life features. For instance, before the distribution of vegetation can be appreciated, surface, drainage, and climate must be studied. The reason for the cold deserts and barren lands of the north will then be seen, for the conifers farther south, the deciduous forests and grass lands, the hot deserts, and finally for the tropical forests.

The Units to be Chosen for Study

In breaking up a continent or a country for study it is not always easy to decide upon the basal unit. In the

case of some continents it is best to make the political divisions the basis, in others the physical. Where a country may be divided into a few well-marked physical regions there is an advantage in making the physical unit the basis, for where surface is similar over large areas, and where there are no great climatic differences, life conditions will also be similar. This is not only a short-handed method of disposing of a large section, but one that is more likely to insure the close association of environment and life than is that method where a political section with its varied physical features is studied. In the case of the United States it will be found more satisfactory first to divide the country according to physical divisions, summarizing later according to groups of states. The chief physical sections to be studied are the Coastal Plain, the Piedmont Belt, the Appalachian Highland, the Prairies, the Great Plains, and the Cordilleran Highland. Each physical division should be studied according to the method previously suggested. For instance, a problem of this kind—"Let us find out why the farms of the prairies give way to the ranches of the plains"—will furnish an incentive for investigation or for the study of the Middle West.

This method does not minimize the importance of actually teaching groups of states—that is, the New England States, the Southern States, and other political groups. When the physical divisions in a section of the country have been studied, attention should be called to the distribution of these divisions in the groups of states of that vicinity, and the pupils should be held responsible for a reorganization of subject matter on this basis. This method, valuable in itself, serves the additional purpose of a review from a new standpoint.

South America is another continent that readily lends

itself to this same treatment, for it naturally falls into a few large physical regions. The study of the great river valleys, of the Andean countries, and of the eastern highlands gives a fairly comprehensive idea of the continent. If this be followed by a summary from the standpoint of countries, the pupils will know South America much better than as though each political unit had been exhaustively studied at the beginning.

A different method should be followed in the case of Europe. There the individual country should be made the basis, for where resemblances and differences among peoples are so largely a question of the political boundary line, the nation is naturally the unit for study.

The geography teacher of the upper grades has not given his pupils the wide view that the time demands unless he has laid special emphasis upon the commercial side of his subject. This involves not simply the old study of imports and exports, but equally important questions as to the resources of the region under consideration, its comparative rank, routes of transportation,—canals, rivers, lakes, and railroads,—the chief countries with which trade is carried on, and other topics of a like nature.

In the study of the Middle West, for example, the children should not only learn that wheat is one of the important products, but they should know as well something of the relative value of this product as compared with our other great products, our rank among wheat-producing countries, how the wheat is disposed of, the centers handling it, and finally the routes by which it is shipped. This lays a good foundation for the later work in the grades, often unfortunately omitted, that gives an appreciation of the world importance of any country.

The Latest Work in the Grades

The last half of the last year of the geography of the continents should be devoted to a summary of the most important features of each, with special emphasis upon industrial and commercial relations. This may best be accomplished through the comparative study of the leading countries of the world, our own naturally forming the basis as far as possible. At the conclusion of this work the pupils should have definite information in regard to the leading commodities of commerce, where they are produced, under what conditions, the disposition that is made of them, the centers of trade associated with each, and the great routes of transportation by land and water. This involves a review of the distribution of the great agricultural products of the world, of the leading articles of manufacture, the distribution of minerals, and the fisheries of the world. They should know the rank of the great nations of the world commercially, their chief exports and imports, and the countries with which trade is largely carried on. A comparative study of this kind is more than a means of review, however. The bringing together of data, its comparison, and the ranking of the commodities of commerce and of nations not only give a bird's-eye view of the "world at work," but a real training in scientific reasoning—a valuable asset and one that geography, correctly taught, is certain to develop.

As a climax to our course, a study should be made of perhaps the twenty-five largest cities of the world. How much do our children, even those who have been well trained in geography, know of them, except perhaps where they are located and that they are "noted for manufacturing" or for commerce? They have no image in their minds corresponding in the least with the reality. That a

certain city is a great manufacturing or commercial center is an empty phrase unless the activity back of it is visualized. In this study of cities innumerable pictures should be shown—homes, public buildings, streets, conveyances, parks, playgrounds. Only in this way is it possible to destroy the conviction that because a city is in a remote part of the world it is necessarily very inferior to the one in which we live. The following points should be emphasized in the teaching of a city. New York is taken as a type.

Its location.

For what is it especially noted?

Factors in location that make it a great commercial center:—New York Harbor; Hudson River; Mohawk valley; position with reference to Europe; lines of communication.

(Maps and pictures should be in constant use, the latter illustrating scenic features, piers, warehouses, and steamers, the former relative positions and commercial routes.)

Other leading industries.

Chief products manufactured.

Advantages for carrying on manufacturing. (Illustrations as before.)

Size of city.

Area and number of people compared.

Consequences.

Nature of buildings—apartment and office.

Congested thoroughfares. (Illustrate.)

Government.

Chief city officers and their duties.

(Photographs of government buildings, schools, museums, parks, playgrounds, recreation piers, etc.)

The analysis of a region according to the method

suggested, beginning with its physical features—surface, drainage, climate—through its resources and industries to the culmination in its interrelations with other sections, forms a body of closely related facts that cannot fail to develop logical thought and scientific reasoning. It gives the pupil, moreover, something approaching an all-round knowledge of a country instead of an assortment of unrelated fragments that are his only possession where geography is still regarded largely as a "memory" subject.

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CHAPTER VII

THE RELATION OF GEOGRAPHY TO OTHER SUBJECTS IN THE CURRICULUM

Coöperation in School Work

THE relation that geography should bear to the other subjects in the curriculum is a problem that has been much discussed in the past and on which some extreme positions have been taken. The late Colonel F. W. Parker, one of the leaders in modern geography teaching, considered geography to be the fundamental subject in any attempt to study life on the earth. As a result of his activities and enthusiastic work, geography was considered in many school courses not many years ago as the fundamental subject about which the rest of the curriculum must be framed. To-day we have in general passed far from this attitude and realize that geography is merely one of the many subjects, of relatively equal value, that go to make up the school course.

We have passed through the stage of trying to center all the several phases of school work so that all the elements will be developed abreast, and have come to recognize that a tandem arrangement may at times be best, from the standpoint of developing both the children and the subject. We are now trying to have all the subjects work more or less harmoniously together, but we recognize that in every well-organized course of study in any subject there is a necessary, valuable unity that must not be sacrificed for the sake of temporary parallelisms of details. For instance, geography and history are, or ought to be, extremely closely related in school, but this does not mean

necessarily that geography and history should deal with the same countries in each grade. The best coöperation comes in the upper grades, where the geography and history of the United States can be studied most effectively to bring out their mutual relations. It may not be true, however, that in the fourth grade geography and history can well go together.

The teacher of history may believe that a certain order of development is necessary in history in order to secure the best results for each year and for the work as a whole. The teacher of geography may work out a similar necessary series of steps for geography. If they agree to have the work so related that the geography shall coöperate closely with history in the upper grades, then the necessary success of the work as a whole in each study should not be sacrificed for the sake of parallelism in the other grades. The teacher of geography may feel free to teach other countries than the United States at any time that will best suit the purposes of the history teacher. Further than that he cannot go if he would keep in mind the success of his work. Coöperation between these subjects is therefore of far greater value than the close parallelism, which we used to call "correlation." Nothing can be more foolish than to feel it necessary to teach the geography of Persia in the fourth grade because the history course calls for a study of Persian and ancient civilizations in that grade.

If the history teacher cannot run parallel with the geography work, let him include in his history so much of the geography of the region as he may feel is necessary from the standpoint of history, and in the same way the geography teacher may borrow from history illustrations of the relations between physical features and life conditions. Such mutual loanings and borrowings do not mean

that the geography work interrupts the continuity of the history work or the history the continuity of the geography. For the purpose the teacher has in mind the work is all history or all geography, and it would weaken the value of the work to have the pupils aware of any distinctions as to subjects.

One of the difficulties of modern education is that pupils of all ages, from the kindergarten to the university, jump from one thing to another with such rapidity and with such frequency that they are in a mental turmoil. Adults know that it is not working hard that takes energy so much as it is doing many different things in rapid succession. How much worse must it be for young pupils whose habits of work we are trying to develop in the best way. As few distinctions as possible should be made in the work of beginners, and the program should emphasize the unity of the work rather than its diversities. Good training comes from working slowly, carefully, and without the sense of hurry. This cannot be accomplished if the course of study is as itemized as the menu of a *table d'hôte* dinner. Hence the necessity of the teacher's keeping distinctions between subjects in mind but of his making those distinctions as little obvious as possible to the pupils, particularly in the lower grades.

The Content Relations of Geography

Geography, from the nature of the subject, has more close content relations with some phases of school than with others. Its relations to history, English, nature study, and arithmetic are particularly close. History not closely related to geography is poor history, especially from the geographer's standpoint. The student of geography must of course be using the materials of the English work and the methods of oral and written description.

Nature study overlaps geography on the physical side, or should do so. Unfortunately, few courses in nature study seem to recognize that there is any geographic side to nature,—as if geography were, by its exclusion, an unnatural subject. Many of the problems of geography involve arithmetical treatment, and arithmetic finds in geography a never-ending source of supply for illustrative problems.

The Service Relations of Geography

Many of the relations between different subjects in the elementary-school curriculum are not so much those of content as those of mutual service. The service relations between geography, English, and arithmetic have been suggested above. Manual training, art, and the other industrial subjects, in the hands of an expert teacher, may be of great service in helping in the expression of geographic facts and principles, and similarly these subjects ought to find in the field of geography many projects which serve the purposes of manual expression.

Geography and Nature Study

Many of the elementary phases of geography, now generally studied in Home Geography, could well be introduced in nature study in the lower grades, and taught so as to be of service to the later geography work. For instance, the simpler relations of weather to children's lives, particularly to their sports, might well be included in the early nature study. Simple generalizations could be made as to seasonal combinations of weather elements, and the life relations shown. In a similar way the relations of slopes to drainage, to roads, to soils, and possibly in rural regions to tillage, could be studied by means of direct observation, and even the

simpler ideas of local land features could be developed. These can be studied through the interpretation of the topics of food, clothing, and shelter, which form a common part of our early work in nature study.

In the upper grades the work in nature study should interlock with that in geography for the best presentation of the essentials of elementary science. Geography might well contribute to nature study the understanding of the physical conditions of soil, slopes, weather, and water supply, which so intimately influence the distribution of the common animals and plants. Geography summarizes the distribution of plants and animals and gives a regional basis to nature study. Nature study ought to contribute to geography an understanding of plants and animals, of the simpler physics and chemistry of soils and plant life which would help especially in the study of agricultural geography and of topics like lumbering. The physics of the atmosphere, properly taught, would assist materially in the necessary weather and climate study in the upper grades. In fact, the opportunities for mutual assistance between these closely related phases of a common field are so numerous that a teacher may be almost swamped by the possibilities. Each subject is incomplete without the other. Both must be presented for a true appreciation of either.

Certain topics are debatable as to their value and their relationships. The characteristics of the several races of men certainly have no place in geography work in the lower grades, except as they come in in association with the regional work in the early continental study. The study of rocks and minerals is geographic in a sense, but so is it naturally a part of nature study, if it be included at all. The study of rocks and minerals in the early grades certainly is far fetched, either as Home

Geography or nature study, where the same types are not found in the region round about. Rock study should be based on the types to be found in the locality and not on museum cabinets to be bought from a dealer, no matter how attractive these cabinets may be for advertising purposes in an equipment museum. In fact, most teachers find that geography in the upper grades can be taught well in any locality without any very serious consideration of the rocks and minerals that enter into the earth's composition.

Also, as has already been suggested, topics in metamorphism, involving the formation of coal, marble, and similar products, ought to be omitted from both geography and nature study, as they are subjects which are incapable of being sufficiently simplified for elementary-school purposes.

Geography and History

As has been indicated above, the relationship between geography and history is very close, closer than between geography and any other of the so-called "humanities." In bringing out the influence of the physical environment on man's activities and movements, the best relations come from the field of history. A study of the favorable conditions for agriculture, manufacturing, and commerce, found near the Fall Line between the Piedmont Belt and Atlantic Coastal Plain, leads to an understanding of the reasons for the growth of large cities now found in the chain of similarly situated cities from Philadelphia to Augusta, Georgia.

The study of growth is history, and the reasons for the present conditions cannot well be made clear without bringing out the pertinence of the same conditions in colonial times. Similarly the study of the paths followed

by the railroads across the Appalachian Barrier shows us, in at least one case, that the same conditions were effective as influences even before the time of the white man. The Chesapeake & Ohio Railroad tunnels twice at its summit level in the Appalachians just beneath the remains of old buffalo trails. How better can the influence of geographic conditions be shown than by bringing out these historic incidents?

Similarly, the climate of the Holy Land naturally leads to a consideration of the persistence of the same form of nomadic pastoral life that has existed in that region for thousands of years. In fact, almost any geographic influence is taught more strongly, more interestingly, and more humanly when it can be seen to have been acting through the ages and not to be merely a relationship that some teacher enthusiast has worked out in the present.

But the relationship between geography and history is not all to the advantage of geography, for many aspects of history are made clear only when they are seen in relation to the geographic background amid which the historic incidents have been developed. The development of the colonies before the Revolution can hardly be made clear without a consideration of the influence of the Appalachian Barrier; a study of the social life of Massachusetts and Virginia may be treated partly as pure history, but it can be brought out at its best only when a comparison is made between the influence of the rolling, glaciated region of New England and the rich soils and broad natural fields of tidewater Virginia. A study of the Civil War without considering the surface and climatic features of the southland, or of Cæsar's campaigns without taking into account the surface features of France, is only half done. Similar instances might be multiplied by the hundred.

In small matters and in great world movements the geographic background has been a great influence, and our better historians are now recognizing this field of study as essential to history, just as our modern geographers are seeing its possibilities in vitalizing geography. In some cases the geographic conditions have been sufficiently strong to be a control of man's movements; in others, and in the larger number of instances, they have exerted a strong influence and man, following the lines of least resistance, has gone with the geography rather than against it. In other cases geography has been a factor, as some historians express it—a factor as persistent and ever-present as is gravity in determining the form and work of the waves on the beaches.

Geography and history therefore occupy a common ground in part and the worker in either field may wander far into the domain of the other without thought of trespass. The teacher of either subject must be equally free to see and use the cross relations if he would make his subject personal and convincing.

In one phase of the work, history is a necessary aid to geography, and that is in the interpretation of political boundaries and of political units or nations. The boundary between the two great nations of France and Germany is a political boundary. Boundaries are an item that must be included in geography because we must deal with groups of people occupying a unit area. These are the basal facts with which we start in our regional work. A boundary may be memorized without borrowing any help from history, but memory work has a small place in modern geography. The reasons for many boundaries can be brought out only when the history of the boundary line is considered. The settlement of the boundaries between Canada and Alaska, and between the Argentine

Republic and Chile are so recent as to be almost current events—history in the making. They show clearly how much history can help in this particular field. History also is necessary in explaining such special boundary features as the peculiar intrusion of Massachusetts into the area of Connecticut, or the absence of a pointed corner to southwestern Massachusetts, or the reason why the boundary between North Carolina and Tennessee does not follow the highest crest of the mountains throughout its whole extent, for these irregularities are not what would be expected from the geographer's standpoint.

Geography and Arithmetic

The coöperation between geography and arithmetic cannot be as close as that between geography and either nature study or history. In the upper grades arithmetic may secure many problems from the field of geography, and particularly problems that permit of graphic representation and involve the study of proportions. The comparisons of areas of countries, lengths of ocean routes in distance and in time of passage, relative statistics of production or of commerce, are all topics that naturally arise from geography. They can be made clear and profitable if they are further used in arithmetic and are presented from the arithmetical standpoint, because this will involve review in a rational way and also will bring about the approach to the same subject from two points of view, always a valuable method of procedure.

Geography furnishes to arithmetic one field of opportunity that is distinctly mathematical and that frequently is studied in the geography period—the problem of translating longitude into time, and the reverse. The development of the meaning and necessity of latitude and longitude is distinctly geography, but so far as geography

is concerned it is only necessary to study comparative latitudes and longitudes, as a rule. Rarely is it necessary to make use of differences in time. Therefore this problem, which has certain advantages, especially in reference to countries that do not use standard time, should be brought out in arithmetic. The comparison of standard times involves so little arithmetic that "he who runs may read." As an aid to geography, arithmetic has comparatively little to offer. Geography does offer to arithmetic, however, a great field of practical, real problems, much more valuable than many of the imaginary problems with which our arithmetics are often filled.

Geography and Language

The relation between geography, or any other subject, and language work, is constant and important. No subject can be presented to children without making use of language, oral and written. Language is the means by which geography is made clear, but unfortunately teachers often feel that it is not necessary to require children to follow the tenets of good language work in their descriptions and expositions of geographic facts. This is far from what should be the case. Good English is the fundamental phase of education, and every pupil should be held rigorously to as high a standard in English at all times as his advancement will permit. In geography, and in other subjects, whether presented orally or in written form, good English should be insisted upon. All materials presented for study should be written in good style, and it is hoped that the time will come when some of the material used in the geography work may be presented in such a form that it will be good from the literary standpoint At present, the lover of good literature can find little of a geographic nature that is both good

literature and good geography. This is not wholly due to the geographers' inability to write in literary form, for the ordinary textbooks and supplementary reading books cannot, from confines of space, be written in such a way as to appeal to the lover of literature. On the other hand, much of the descriptive material in prose and poetry from the pens of approved writers is from the geographic standpoint either inaccurate or inconsequential. Thus there is a dearth of good literary material for geography in elementary schools, though the increase in matter available in higher work has been very marked in the last few years. A few supplementary volumes are available to which this criticism does not apply, but unfortunately they are rare.

Geography does offer some contribution to language work in that it considers the landscape and possibly the sky conditions that have been described in literary form. Certainly the quality of a poem is increased in value if pupils can get some idea of the region described from a different standpoint. They can then measure the poet's success in depicting a scene, and thus the poem becomes to the pupil not a result of closet imaginings, as many suppose, but an attempt to portray conditions as they are and perhaps even more accurately than would the geographer. Some of the poems of Whittier, for instance, are particularly good illustrations of this, especially to any one who knows the New England landscape. Kipling's

> "And the dawn comes up like thunder
> Out of China 'cross the bay"

is one of the best descriptions that we have of the effects of the rapid rotation of the earth in low latitudes. It adds wonderfully to the adequacy of the description of the same phenomena, from the geographic standpoint.

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CHAPTER VIII

GEOGRAPHY AND EXPRESSION WORK

The Value of Expression Work

THE most used form of expression in geography work is oral and written expression, and so must it always be in education. The hackneyed phrase, "No impression without expression," has been translated by many enthusiasts in hand work to mean that all ideas must be worked out by all pupils in some form of manual training or art, and in this sweeping statement have ignored writing as hand work. As a matter of fact, common sense and justice would suggest that in every subject in the course of study the pupils ought to be permitted to express themselves in that form which they can use to the best advantage and which most accurately expresses their ideas. To measure a pupil's knowledge of the necessity of bridges in modern transportation by his ability to construct a bridge along the proper structural lines, to use a well-known illustration, is to go far afield from the point, to spend precious time in non-essentials, and to make the pupil follow a form of expression that may not be adequate to his abilities or just to his ideas. Expression is vital, and no one knows a subject until he can make it clear to a rational minded ignoramus. All work in geography must constantly make use of expression, but the larger part must be oral and a certain portion should be written. A part may be some other form of expression, and this is particularly true when certain classes of topics are under consideration.

The larger forms of visual expression in geography will ordinarily be some kind of map work and sketching. Projects in wood, iron, clay, and paper may at times be brought in, but as a rule work of this character will be introduced as manual training and not as aids to geography. If such projects are good from the standpoint of manual training, there is no reason why they should not be used, but expression in these materials is not a natural method in geography work.

Map Modeling

The most frequent form of map work employed in the lower grades is some form of map modeling, either in sand, clay, or paper pulp. A few years ago such work was more common than it is now and the sand table was an essential part of the equipment of any well-ordered schoolroom. Map modeling is capable of producing excellent results in the hands of a qualified teacher, but in the hands of one less experienced is likely to be very bad, both in character and in the results that pupils secure. In order to be effective, one very constant and serious danger must be guarded against—and that is the danger that pupils will visualize the models of large areas, of which the vertical scale must be seriously exaggerated, and that they will think that the region depicted actually looks like their model. Practically no models can be made without vertical exaggeration of scale, which means over-steepened slopes, over-rugged profiles, and impossible landscapes. Even the skillfully made relief models and maps furnished by publishers have to be used with great caution in this regard. How much more carefully must the models made by inexpert pupils be used to prevent erroneous ideas that only long and hard study will correct as the years go on. Better a blank mind than

one full of wrong impressions, is the verdict of any teacher in the upper grades. Unlearning is harder for both pupil and teacher than learning. This is particularly true of visual images gained from the study of appealing but prevaricating models which are more imaginary in character than a fairy tale. No models of the United States or North America can present details like the valley of the Columbia or the Grand Cañon of the Colorado in proper scale to the width of the continent. Hence such models must be led up to gradually. Children must be taught to interpret vertical exaggeration before they are permitted to attempt to model large areas or even to study such models.

The best way to introduce this work is to model the area to be seen in the local landscape. By comparing the slopes of the model with the slopes in nature, pupils may be led to see how far from the truth their product is and therefore how much more erroneous must be the model of any larger areas.

The first modeling should be to show general relations and not to attempt to show a given region. Let children represent flat land, gentle slopes, strong slopes, and very rugged regions, and judge their products with care. Then let them model the region within their visible landscape and compare the slopes of this model with the slopes they have previously made. Let them see whether they have shown what they know to be gentle slopes as gentle slopes, or, as will more probably be the result, in a very much exaggerated way. Thus by successive steps one can lead up to the models of larger areas which should show general relations only and not pretend to show exact conditions. A model or a relief map of North America, for instance, that shows general relations, may be made the basis or even the climax of some effective work, but similar products which seem to indicate that the section

considered is really pictured, are dangerous monstrosities that should be avoided with diligence and forethought.

Map modeling has its place as an effective means of teaching, but its place is more secure with older than with younger pupils. This form of expression must always be used with caution and should not be employed by the follower of a book or a method who himself has no natural ability for doing this work.

Map Drawing

Map drawing is at the present time less followed in our school work than is map modeling. Not many years ago formal map drawing was considered an essential part of school geography and textbooks always included a series of map diagrams and rules which reminded one very much of dress patterns and which were much less useful. Such map drawing has largely gone out, although there are school texts based on this method and several excellent little books on the subject. Map drawing well taught is valuable, but like map modeling the dangers from its use by an inexpert teacher are great. No pupil or teacher needs to construct a map in order to use one intelligently and profitably. Hence map drawing must be shown to be an effective means of making geographical information into real knowledge, or it has no place in school work.

Many difficulties will arise in the teaching of map drawing. In the first place, every map that is not drawn according to some absurd series of geometric figures with sides of stated length, must involve the recognized use of projection and scale. Children may readily be taught to use scale and projection, but it is quite another matter to learn to draw a map according to a given projection and a certain scale.

A most persistent source of error from map study is the visual impression gained of relative areas. This is particularly true of small-scale maps of large areas, drawn on a Mercator projection. Map study or map modeling must be so planned as to correct these wrong impressions and to give right ideas of relative sizes and positions.

A continent drawn to one projection presents one outline and by another projection appears in vastly different form, both of which are very unlike the globe outline, even to the untrained observer. The visual images that pupils acquire should be of maps as nearly like the globe representation as possible. Hence care should be used in choosing the outlines that children will visualize and the poorest that can be secured will be their own inexpert attempts or inaccurate copies.

Another serious criticism of map drawing is that it is so time consuming. The same amount of time devoted to some other means of study would ordinarily produce far better results, and time is precious in geography teaching. Pupils may make most beautiful products that look well in school exhibitions and which are a source of pride to parents, but have they learned geography in so doing? Map drawing should be used to test pupils' knowledge or to strike home certain truths that can be better taught this way. In general, can map drawing be praised for its efficiency from either standpoint? Maps do offer a chance for pupils to show skill and taste in drawing, but that is a phase of art and not necessarily good from the geographic standpoint. Thus, from the standpoint of accuracy, effectiveness as a means to an end, and as a labor-saving device, map drawing is open to question, except in the hands of a master teacher who sees the difficulties and the advantages and knows how to avoid the one and make use of the other.

Map Filling

Many of the dangers of map modeling and drawing can be avoided by the use of the better outline maps now on the market. As a means of testing pupils' knowledge they are convenient and time saving, and this is the largest purpose of any form of map reproduction. As a means for giving visual images they are of special value for the reason that pupils always study the same outline and thereby may by repetition get a good idea of a region. Good outline maps drawn to scale and according to a good projection, and there are many of these on the market, are therefore the best possible bases for map reviews and generalizations.

The ordinary outline map is poor in one regard in that it is not made to show the general features of relief in any way. There have been various attempts in the past to represent relief by embossing, but all the comments that have been made above in reference to the dangers of relief maps apply to embossed outline maps, and then the surface of the subject will have only been scratched. Suffice it to say that embossed outline maps should be avoided as should any other dangerous influence that ought to be quarantined.

Outline maps therefore should be used freely throughout the school course. As a means for testing knowledge of location, of the distribution of any phenomena over the world, whether it be the distribution of wheat or cotton, of railroads, cable or steamer routes, of volcanoes, ocean currents, or colonial possessions, they are invaluable. The opportunities are limitless and the cheapness of these maps makes their free use possible in most schools.

In using these maps care should be taken that they are treated in the best way. Children should not be permitted to fill them in carelessly. If they are to be colored they

should be colored artistically and not glaringly and in a slovenly manner. The chance to apply the principles of good taste in selecting colors should not be ignored, for art is not for the drawing period alone. Good work does not mean, however, that much time should be used in minute decoration. The map should be filled out as quickly as is consistent with having the work done accurately and clearly. Dawdling should always be discouraged, whether it be a bit of mental or of physical work that is asked for.

The teacher who dreads map drawing or map modeling or molding need not fear bad results from the use of outline maps. He may know that he is using the best materials available and hence that his pupils are gaining impressions more nearly correct than can be anticipated from any other method of map reproduction.

Geography and Art Work

The coöperation between geography and art work cannot be very close so far as projects of advantage to both are concerned. As has been indicated previously, in all geography work requiring drawing or coloring, results should be required to be artistically pleasing. The teacher might well hold the same standard in mind in choosing pictures, lithographs, colored lantern slides, colored maps, imaginary diagrams, and similar pieces of equipment for class use. The appreciation of what is good artistically comes largely from seeing that pupils come in contact with as little as possible that is crude from the artistic standpoint. It is easier for most people to learn to appreciate good art than it is for them to learn to express themselves by painting or drawing so as to meet the required standards of good taste in art.

Art is not a thing to be taught only in set periods.

The principles of art should always be kept in mind in all work involving the production or interpretation of projects involving good taste in choice of color or line, and hence art is an everyday topic just as good English should be. Therefore the principles of art may often be applied in geography, with mutual advantages.

Geography may offer certain projects to fine arts that may be valuable from the fine arts' side, but it is not to be expected that fine arts will add much to the clearness of the geographic results that pupils gain from their work. Geography must be taught as a special subject in which the fundamental principles of other subjects are applied as frequently as possible, but it can be taught without the aid of fine arts and fine arts without the aid of geography. Yet each should borrow freely from the other when possible, as it is always valuable to show that different subjects in the elementary school are not isolated or mutually antagonistic.

The study of landscapes as to color and form, and especially the beauty of certain slopes in land forms, which are as fine as any to be found in statuary or painting, may vitally assist the teacher of geography in giving pupils an appreciation of a landscape. Fine arts may also include certain detailed projects which will help geography to a limited degree. National costumes, for instance, as evolved in the sewing classes after designs worked out in the fine arts' classes, will add much to the picturesque side of geography, and the picturesque may frequently receive too little emphasis in geography unless teachers are extremely careful. Many similar projects might be suggested that would be available in art work and helpful to a degree in geography, but as yet these mutual relations are not fully developed. The wide-awake teacher will readily find the possibilities and should

put them into effect, but it should be borne in mind by all that these relations between art and geography are mutual aids and not a question of mutual dependence.

Geography and Industrial Work

Industrial work as usually taught on the technical side involves construction work in paper, clay, wood, and iron, and the use of food materials and fibers in cooking and sewing. Here again geography aids the industrial work more than the industrial work aids geography. Geography may consider, as it usually does, the distribution of the raw materials on which industrial work depends and present the reasons for the types of houses, costumes, or utensils, or the varieties of food used in different parts of the work. A knowledge of the geography underlying the industrial work seems, therefore, a necessary background to efficient work in this line in the upper grades. The interchange of industrial products which forms the basis of modern commerce is a question of geography, and naturally should be included in our geography courses.

Thus these two phases of education interlock to a certain degree, but they are not as closely interrelated in details. Construction work, for instance in paper or clay, does not add much to the effectiveness of geography because the projects are, from the state of the children's advancement, of necessity too simple to be of help in making geography real.

Work in wood and iron involves a certain maturity on the part of the pupils which usually comes later than the items in geography that might be applied in the wood and iron work. For instance, the question of transportation usually comes up in geography in the fourth or fifth grade, earlier than it is possible to study this topic constructively

to advantage. The building of railway cars and tracks, of aëroplanes, or of bridges, therefore, cannot add much to the vitality of the work in geography. The ability to make a bridge or a railroad is not required to make clear the necessity of cars or bridges in modern transportation. The same thing is true in reference to constructing shelters of wood or cloth and to the fashioning of utensils and similar projects. They must as a rule come later than the related topics in geography, and therefore we must depend for our clear images in geography not on what children make but on the illustrations we can use of what other people have done to meet similar problems.

Constructive work aids geography only incidentally, but geography can aid constructive work by suggesting helpful projects and by giving an understanding of the distribution of raw and finished projects.

The development of industrial education will see a closer coöperation between geography and constructive work, but that coöperation will be in a large way and not a matter of parallelism by grades in minutiæ.

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CHAPTER IX

THE PLACE AND USE OF A TEXTBOOK IN SCHOOL GEOGRAPHY

The Advantages of a Textbook

WHILE there is a rightful difference of opinion as to the necessity of using a textbook in geography, on the part of those teachers well trained in the subject and skillful in leading pupils to make the best use of other sources of reference, the fact still remains that for the vast majority of teachers and pupils a textbook is an indispensable accessory in geography teaching. Although many teachers may be able to get along without a textbook at times, the fact that textbooks of geography are so many and so freely used shows that a text fulfills a need that is widespread and that its advantages outweigh its disadvantages. The advantages of using a textbook are many, but the chief points in favor of a text are few and yet convincing.

The fact that a large proportion of the courses of study in geography in our country is simply assignments of a certain number of pages of a given book for each year of study shows that perhaps the first point to be made in favor of a textbook is that it forms a course of study where none better, or more adapted to local conditions, has been prepared. This is not as it should be, for every locality ought to have its own course of study prepared by the best authorities available, but it is far better for teachers to have their work blocked out by a text than to be left, perhaps helpless, to wander at will or by chance through the whole field of geography.

The textbook, also, by its spacial arrangement and by the proportion of space devoted to given topics or areas, shows, in general, the relative values of different parts of the subject. This is a necessary part of the training of a pupil and also lays the right foundations for later work in geography for those who expect to go farther in school work. Of course some texts written to develop a personal point of view, or to exploit a method that is temporarily much in the public mind, do not meet these conditions, but fortunately such texts are few and decreasing in number.

Any text, no matter from what point of view it is written, does as a rule give definite summaries and accurate, brief, generalizations. Such definite generalizations are necessary as a help to most teachers, and make concrete the larger points that have been perhaps discursively treated in the lesson. One of the greatest needs of pupils in any subject is definiteness. There must be some source to which they can turn for an absolutely definite presentation of the larger points and summaries made. This is especially true on the part of those pupils who gain their clearest conceptions through the eyes. Points developed orally need to be summarized for most pupils in such a way that they can gain a clear impression through visual presentation. Many pupils also gain their best results when a given subject is presented to them in more than one way. However effective teachers may be in their classroom work, many pupils feel a need for another form of presentation that will enable them to clear up certain points and to read slowly and carefully about the topics that have been too hastily treated in the classroom. The text, therefore, is a necessary aid in most geography teaching.

Another great advantage of a textbook is that it

furnishes a source book for careful and effective training in how to study. Its texts, its maps, and its illustrations are, or should be, the principal bases from which the pupil may secure his ideas concerning the topic in question, and for the careful and systematic study and correlation of which he ought to be held responsible at least in certain grades. Carefully planned lesson outlines in the hands of a good teacher will enable the pupil to gain the best of training in the use of text and maps. The power to make use of the materials available for study is the greatest and most permanent acquisition a pupil can secure from his school work in geography. In comparatively few school systems is it possible for teachers to give this training from atlases and reference reading; hence, in most schools, training in how to study geography must be secured from the careful use of the text—that is, all the textbook, its maps and its illustrations as much as, and at times more than, its words and phrases.

Such a use of a text is also a means, and a most valuable one, of holding pupils responsible for a definite task. Children need much training in this regard. No training can be worse than that which permits careless study, slipshod thinking, and slurring answers. In after life pupils will be given a definite task and held up to a definite standard response. In school life such responsibility should be often placed and as frequently insisted upon—not only because it is a means of good training but also because it creates a respect for the value of the subject and for the school work as a thing worth doing, and doing well. Pupils well trained in the accomplishment of definite tasks soon gain not only a respect but a liking for the work. They like the experience of responsibility, of being treated like little men and women, and gain power, self-reliance, and vigor from their school work.

Because it meets all these needs better than any other source book in school geography work, the textbook will long continue to have an important place in classroom work in geography. This does not mean, however, that the text should be the absolute master of the situation and that all class exercises should be based upon it in any year or in any course of study. In fact, nothing can be farther from the truly ideal way of using a text.

In perhaps no schoolroom should the text be an absolute guide for work. A text written for all localities cannot be the best outline for every locality, and a teacher who is the slave of a textbook will never succeed as a teacher of geography. Every teacher or superintendent should feel perfectly free to alter the order of a text, particularly in reference to the order of treatment of the continents, to suit the peculiar needs of the local conditions. Because Africa precedes Asia in the text is no argument why it should do so in all classroom practice. A comparison of the order of treatment of the same topics in the leading textbooks of the country shows that authors do not agree as to the best accepted plan of procedure. Hence why should any text be followed blindly by a teacher sufficiently a master of himself and his subject to be able to do better work by following his own outline?

How to Use a Textbook

Although no absolute rules can be laid down as to the ways in which a text may be used in classroom practice, in general it may be said that there are three distinct methods of usage applicable to the different phases of school geography work.

The more common way to use a textbook is to assign lessons in it to be made the basis of a subsequent recitation period. Such a method of procedure is particularly

common in the study of the geography of regions. The plan has many points in its favor, particularly at certain stages of the work. The great danger is, however, that pupils will memorize the text and recite it glibly without gaining any real understanding of what they are doing or are trying to do. It is as a rule better, therefore, not to have the text studied before the recitation period except after pupils have been trained how to study a text, how to relate the materials contained therein, and how to work out the causal relations which the text should make clear. They should be taught to seek the problems in a given lesson or chapter, to organize the facts that bear upon them. They should learn to study lessons as wholes and not in separated and unrelated parts. This training in how to study should begin in the intermediate grades, when the text is first introduced as the chief source for classroom work. It is equally valuable at times to give the pupils a carefully arranged series of questions that will cause them to study the maps and pictures of the text and to relate the word presentation to the more graphic forms of presentation. In all work, map work is very essential and should as a rule precede the study of the letterpress. Maps should also be constantly referred to and relied upon for giving a knowledge of the location of places mentioned in the text.

Such training in how to study is of first importance not only in geography teaching but in the teaching of any subject. To turn a pupil loose with a textbook to gain what he can, unguided and in his own way, is usually to leave him to flounder discouraged and disgusted. He acquires a contempt for school work and for the subject, he gains bad habits of work, wastes vital energy, and loses the most valuable acquisition he can gain from his school training—namely, how to study easily and successfully

and how to use his energy profitably and without waste.

At other times, especially in the earlier work and in the study of the "Principles" which usually are found in the introduction to the second book used, the text should be used as a "text"—that is, each chapter and perhaps each paragraph should be used as a point of departure by the teacher in the development of an understanding of the topics included in the text. The points developed through the study of maps, of features observed out of doors, of pictures, or perhaps of models, should then be studied from the text.

Teachers will find by experience that at certain times the text should be studied before the recitation, at other times during the recitation, and again sometimes after the recitation. The topics of geography cannot be listed so as to show in which way the text should be used at every stage. The development of the pupils, the training and experience of the teacher, and the character of the course of study as a whole will often be the determining factors that will suggest to the real teacher which method of procedure will be the best. In most cases, however, and for most topics, the text will be found to be a necessary adjunct to good and successful work in geography.

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CHAPTER X

THE USE AND MISUSE OF MAPS

The Value of Maps

OF all the forms of representing geographical facts and principles, a map is the most accurate and at the same time the most suited for producing a given response in the minds of the learners. Summaries of conditions pertaining over areas incapable of being seen at a glance cannot be made as clear in any other way as through a map. This is especially true of facts of surface, drainage, climate, the distribution of animals and plants, of commodities, of routes of travel, and indeed of all relative location.

Pictures are purely local and give only one point of view in reference to the facts presented. They are of course necessary for representing individual local features or groups of features that may be seen all at one time. They add picturesqueness to the subject, give a human reality to the topics under consideration, and are capable of being studied effectively because they make it possible to compare local features in a distant locality with the familiar eye pictures of the home region. They cannot be used, however, for representing large geographical facts, and are serviceable only in a limited way as modes of expression, or as forms of description in geographical exposition, whether it be in a book or in a classroom.

Words are often even less effective in geography work than are pictures. The word pictures of unknown areas give general impressions only, pleasing, but yet often unsatisfactory. A picture or series of pictures may help

to make the description more clear and effective, yet one cannot get from either words or pictures, or from both used together, a real comprehension of how an unknown country looks. A visit in person will show any one that the impressions gained from word or pictorial description are inadequate and often misleading; half truths and not whole truths have been secured. As a matter of fact, a person who knows how to use a map, and who has a good map to use, will often gain a better idea of a distant area from the map than from the study of any or all other forms of representation.

Words, either oral or written, are often unsatisfactory because they do not create the same or even similar images in the minds of listeners. All teachers, and particularly those who teach largely through lectures, are well aware of how impossible it is to create clear-cut images in the minds of audiences by words. A word or phrase may be interpreted one way by one person and in quite another way by another. The placing of emphasis in a sentence may often create misconceptions, and the matter under discussion may have to be presented in several ways before the point is equally clear to all. In a class of twenty or more, the individuals will be unequally prepared for undertaking the work. Some have a small vocabulary and others a large one; some see no differences in meaning between two words which in the mind of the user have a wide difference of connotation. Hence words are poor vehicles of expression at best, and while available for the transmission of thought and feeling, and the best medium we have for general purposes of communication, are of lesser value in all work where the personal equation should not, from the nature of the subject, enter.

Finally, a student who approaches a subject through the word presentation only will, unless carefully guided,

often memorize the words and do no real thinking. He may be able to talk about the matter in a glib form, but purely through quoting, and may give an impression of a knowledge he has not gained. Every good teacher knows how readily pupils memorize the words of a text because it is so much easier to memorize words than it is really to learn a subject by working at it from different standpoints until it is one's own.

Of course maps may be studied in such a way as to lead to memorizing only, but pupils may more readily be led to think over the problems presented graphically by maps than to digest the thought content of a chapter in a book.

Hence maps are of fundamental importance in geography study, and the ability to use a map is one of the most important acquisitions to be secured from school geography work. Maps should not only be made foundational in all text study of geography, because no subject can be adequately approached unless it is placed somewhere and because maps furnish the best materials for study in various phases of the subject, but also because the ability to use a map is one of the best preparations for later life that can be given pupils during their school years.

Atlases and local maps are now cheap and easily secured. Pupils may have at their service after they leave school the best sources of reference existing. A pupil should know the language of maps, their value and their weaknesses. He should be trained to use them freely in reading the daily papers, books of travel and description, history, and even fiction. He should realize that to read about a place indefinitely placed in a nebulous unknown land is not to get knowledge or even information. A region that is not definitely placed in relation to the reader's known world is as unreal as fairyland or Captain

Kidd's island. The map habit, therefore, is an essential habit that all should acquire.

The Language of a Map

Scale. The language of maps is relatively simple, and yet few persons use that language easily or even intelligibly. In all maps it is necessary first to study the scale and the projection. It is only through the proper use of the scale that any one can get an idea of relative areas and of distance. Graphic representations of relative areas by means of an insert of a unit area like Kansas, Ohio, or the British Isles is helpful, but such an insert cannot be applied accurately in measuring any large area. The scale, which can easily be applied to the map by means of a divided rule, can, on the other hand, be used readily even by the beginner. Maps with different scales should be compared, and distances and areas, drawn to different scales, should be contrasted until the learner sees the need of adopting a scale in any map and acquires the habit of always using it in reading a map.

Inasmuch as all the maps of large areas in common use are distorted more or less, particularly in the regions represented about the edges of the maps, the knowledge of the use of scale must be supplemented by the study of the form of projection adopted. Children usually come early in contact with maps on a Mercator projection, where the distortion of the areas in the higher latitudes is enormously great. Many of the false and persistent impressions of the relative areas of Canada and the United States are due to the fact that children have studied a Mercator map of the world without noting that this map has no scale and hence cannot be used for a study of areas or distances. It is only available for the study of directions.

Projection. A knowledge of the theory of projections or the ability to draw a map according to any of the more used projections is not necessary for a teacher, though the value of such a knowledge is of course great and should be secured where possible. The ability to interpret any projection in common use is a necessary part of the training of any teacher, but this ability can be gained most easily. The meridians and parallels, no matter in what direction they are drawn, are north-south and east-west lines. With the boundary meridians and parallels as a guide, direction within the irregular parallelograms may be easily determined and relative location of places determined with accuracy. By this simple means, coupled with the ability to use scale, all the ordinary problems of map study may be easily solved and the necessary training in map usage easily given.

Representation of Surface Features. In our usual school texts little use is made of the schemes adopted by government bureaus for representing surface. In general, shades of brown are used to represent relative altitudes, shades of blue for relative depths of water surfaces, while black is used for boundaries, cities, transportation routes, names, and other cultural features. Rivers are also drawn in black because black shows best on the varicolored background necessary on political maps to show states or countries and the general surface features. In some cases lowlands are indicated in green and intermediate slopes in shades of buff. All these colors, however, are used only to represent general features. Details of surface on a large scale map must be represented by the familiar contour lines of our United States Geological Survey topographic maps, by shaded black lines or hachures as are commonly used in map making in Germany, England, and several other countries, or by shades of brown as is the custom in

many atlases. Other colors are of course used for special purposes in general maps where strong contrasts must be made. Railway lines are often shown in red.

The ability to translate these colors or lines as well as to use scale and projection are as necessary to the study of geography as the alphabet is to literature.

Location. Textbook political maps are primarily for use in the study of location—a very necessary part of the training of every student. Every place referred to in the text should be looked up on the accompanying maps, and all the more important places should be located frequently and the knowledge of the location on the part of the pupils be tested on a wall or outline map. Of course most textbook maps contain many more places and names than will ever be used in classroom work, for the reason that in American schools and homes the geography text is a book of reference for location that arises in the study of other subjects or in everyday affairs. The amount of attention given to location should not be as great as was customary a few years ago when pupils were called upon to memorize the position of hundreds of unimportant places.

Places and points to be located may well be divided into three groups: (1) those features the location of which every person should know without consulting a map, such as the greater cities of the world, the larger rivers, the chief countries and mountains; (2) those places of local but not general significance which should be well known; and (3) those places and points of relatively lesser importance which should be located at least once, so that they may be quickly relocated when needed.

The first two classes would be in general the same for all localities, but some of the places in Group 3 in one locality would belong in Group 2 in another locality. For instance, New York, Washington, Chicago, Berlin, London,

Peking, and Rome would obviously be in Group 1 for all localities. Vienna, Lyons, Para, Constantinople, Sydney, and Irkutsk would be in Group 3 for all localities in this country. For pupils in California, towns like Springfield, Cambridge, Fall River, and Haverhill, Massachusetts, would fall in Group 3, while for pupils in Massachusetts they would fall in Group 2. Similarly, cities like Los Angeles, Fresno, and Stockton would fall in Group 2 for California pupils and Group 3 for Massachusetts pupils. If teachers will judge of the relative importance of points to be located from the standpoint of the needs of the pupils they are teaching, they may easily decide how much emphasis should be given to the location of any place or feature that may arise.

Special Maps

The physical, climatic, commercial, and special maps usually included in a geography for the upper grades are intended as a basis for study from the topical standpoint. They are the source from which pupils are to study problems assigned in lessons, as well as the means of showing generalizations described in the texts. Each of these types of maps has a special language of its own easily interpreted by any one who is familiar with the ordinary political maps. They are not inserted as mere illustrations to be looked at in passing. They should be used freely and constantly as a basis for the study of the general topics in the introduction to the geography and in association with the study of any continent or country. These maps and the political maps ought both to be used as a means for fixing ideas to be visualized, for a large part of the training in location of places, physical features, climatic conditions, and similar things must be through visiqualing and not through memorizing.

Map Questions

Questions on maps should primarily be planned to make pupils think and to give them training in relating topics and points. The difference between training the memory and training to think is the primary difference between the modern and the former methods of teaching geography. Map questions should call for a study of the causal relations which are the keynote of geography. They may be planned so as to work from the climatic and physical conditions out to the life relations, or, the method being reversed, they may call first for a study of the human conditions and an analysis of the underlying controls or influences that have brought them about. Compare the type of modern questions in (1) below with those in (2), in vogue not so many years ago.

1. "What other cities in the world are in about the same latitude as Madrid? Compare the area of the Spanish Peninsula with that of France. Compare the populations. Compare the directions taken by the rivers. Judging from the map, what would you expect as to the number of good harbors? Why is there no town at the mouth of the Guadalquivir River? Why should the west coast have more rain than the east coast?"
2. "What four rivers of Spain flow into the Atlantic Ocean? What one into the Mediterranean Sea? What two capes on the northwest coast? What one at the northeast point? What port on the northeast? on the east? Where is Cape Ortegal? Cape Finisterre? St. Vincent?"

The first group of questions calls upon pupils to work out relations and generalizations that are worth acquiring

as permanent acquisitions, and the solving of these gives them power to work out problems for themselves. The second group of questions calls for the acquisition of information much of which is not worth securing. The first group of questions requires pupils to study the political maps in association with the physical and climatic maps; the second group calls only for a study of the political map, and is practically of the same pedagogical value as the solving of a labyrinth in the puzzle column of a children's paper. The making out of map questions is something that every teacher should do for himself, basing the work on the text and such other reference materials as may be available. No text or course of study, through lack of space, can present a complete set of map questions for every country. The number of questions and the manner of introducing map work must vary with the conditions to be found in the particular school. Map questions ought not to be brought out only as an introduction to the study of a country, as is so often done; they should be used constantly throughout the treatment and may well be introduced a few at a time, perhaps in the middle of a lesson as much as at the beginning.

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CHAPTER XI

OBSERVATIONAL WORK IN SCHOOL GEOGRAPHY

The Necessity of Studying Actualities in Geography

ACCORDING to our definition, geography is the study of the earth in its relation to life. According to practice, geography is the study of the symbols of the earth in their relations to life. It is the study of the map, of the model, of the photograph, but seldom of the earth itself. In much of our work this secondhand method of acquiring information is the only one possible. Because it must be so generally resorted to, however, is no excuse for its universal use. Wherever the actual is needlessly sacrificed to some representation of it, we sacrifice at the same time a vital part of the truth, for the most accurate and most lifelike symbol in the world is after all not the substance but the shadow. That we have to deal so largely with symbols should stimulate us to seek opportunities of coming into contact with realities, but too frequently the reverse is the case, for it is easier to run along in a rut than to keep one's eyes open and one's mind alert that one may be ready to seize opportunities of coming into contact with nature as they present themselves.

This direct contact with nature cannot be urged too strongly. Interest in the topic under consideration is so much keener, impressions so much truer, stronger, and more lasting, that any other method must be regarded simply as a makeshift. We have all probably had the experience of being confronted with the reality after perhaps years of familiarity with a symbolic form, and

have felt the need of an immediate reconstruction of our preconceived ideas. It is so difficult for a person living in a flat country to visualize a mountainous one without contact with such a region that it is doubtful if an impression even approximately true can be gotten. How many people can see truly a river valley like that of the cañon of the Colorado if life has been confined to a valley like that of the lower Mississippi? If we could only see into the minds of our pupils after our best efforts have been expended in making some point clear by the usual methods, we would be more ready to avail ourselves of every help that our physical environment affords, even at the sacrifice of personal inclination and at the expenditure of considerable energy.

One of the greatest opportunities given to the teacher of geography is that of interesting children in nature, of opening their eyes to its works and their lives to its influence. This is as many times more difficult for the city than for the country teacher as its need in the city is greater than in the country. The country child learns much of nature without the assistance of the teacher. He is in his natural environment, and unconsciously absorbs with every breath he draws. The city child is shut out of his heritage. His loss is greater than can ever be made up to him, but no opportunity should be neglected of making all the reparation possible. There are innumerable ways and means of bringing about a contact with nature, and the more we look for them the more we shall find.

The Field Lesson or Excursion

The value of the field lesson or geographical excursion needs no advocate to-day. We know that there are "books in the running brooks" and "sermons in stones,"

though we persistently turn away from them. Teachers are not all as backward in this respect as are we in this country. In Germany and Switzerland the excursion is a recognized part of the course, short trips being taken for the smaller children and long ones extending over several days for the older ones. There one constantly meets large groups of children, in both city and country, under the guidance of their teachers. It is apparently as much a matter of course as is the instruction in the schoolroom, and occasions no more comment. The same enterprise and vital interest in education is shown in places in our own country. But on the whole the children of our country will never receive the benefit of this form of instruction until it becomes incorporated into our system of education. In the meantime a true teacher here and there will not only open the eyes of his pupils to the world about them, but in so doing will hasten the day of the general recognition of this work as a necessary part of the training of our children.

In country schools much of the instruction in geography should be out of doors. It is absurd to teach hills, valleys, plains, drainage, and similar topics in the schoolroom, when by stepping outside we may find them at the threshold. The city teacher is not so fortunate, yet his task is surely not impossible. In most of our cities are parks and open spaces of various kinds that may be utilized. The streets themselves, even though paved, have much to teach us. They are made up of slopes, some long and gentle, some short and steep. Perhaps the schoolhouse is situated on the summit of a hill. Valleys, though paved, may be a conspicuous feature in the topography of the city. These may serve as routes of transportation and should be used as an illustration of the value of valleys as such routes the world over.

It is better to teach hills, valleys, and plains first from some park, that the forms may be seen in their simplicity. A plain covered with buildings does not prevent the land from being a plain, but the idea is more readily grasped if such accessories are not present. It is equally important, however, when the idea of the form is comprehended, that it be applied to the locality, and this should be borne in mind throughout the work. Pupils frequently know a good deal about the geography of Africa, or of South America, or of the conspicuous features of their own country, but it is a severe test of instruction to ask them to describe their own locality.

Drainage is a most interesting topic to teach and can usually be managed without difficulty. A city street immediately after a shower, where the little rivulets have made tiny valleys for themselves, is excellent as a beginning. During a short walk one can often find in miniature many of the features that should be taught in connection with this topic. A main stream with its tributaries forming a river system, falls, rapids, and lakes where obstructions exist, are of common occurrence. After a heavy shower one may frequently see forms of deposition, as deltas and alluvial cones. An excellent spot for the study of drainage is an excavation for a building, again after a rain. Here one can usually see lakes and rivulets in the bottom of the excavation, "mountain torrents" flowing down the sides, or at least their valleys if the water has drained off, and at their mouths well-marked alluvial fans.

Of course this in itself is not a sufficient or a satisfactory study of drainage, but much can be done with it, as every teacher can testify who has made the attempt. It is unnecessary to say that this method of introducing drainage will be more popular with the children than any indoor work that might be presented. If possible, this

should be followed by an excursion to a brook or a river, where the features seen in miniature may be observed on a larger scale.

The following outline is suggestive of the chief points to be brought out:

Flow of river:
- Direction, rate.
  - Test by chips, etc.
- Course.
  - Straight or winding.
- Slope of bed as indicated by falls, rapids, lakes, etc.

Depth:
- Deep or shallow—make tests, or look for indications.

Work:
- Erosion of valley.

Characteristics of valley:
- Narrow or broad, steep sided or with gentle slopes, shallow or deep.
  - How the work is accomplished.

Transportation:
- Ways in which material is carried along.

Deposition:
- Various forms.

Uses of stream and valley.

The order of topics must be determined by the circumstances. If the stream is used for water power or for navigation, either might be taken as the point of departure. If it is simply a brook having no conspicuous influence upon life, there is no reason why some point of interest in the stream itself, as its motion, should not be taken as the introduction to the topic.

The location of the school will of course suggest the

main line of field work to be followed. If the town be on the sea, shore characteristics such as islands, peninsulas, beaches, bays, harbors, will naturally be taught. The excursions that have been described thus far are primarily for the purpose of becoming acquainted with the physical environment, though of course life relations should always be studied in connection with the physical. The industrial excursion is of equal importance in the study of geography. In studying farming, a visit to a market garden or a farm is most helpful and ordinarily not difficult to arrange. Usually a trolley trip will make more than one a possibility. When dairying is studied, a dairy farm will prove to be by far the best method of attacking the problem. A factory, where the work carried on is not too complicated, will throw much light on the particular form of manufacturing exemplified and upon the process in general. Again, if the town in which the school is located is a seaport, the harbor should be visited for the sake of the shipping and that the means adopted for the protection of the vessels may be studied. The docks, the warehouses, the piers,—all have much to contribute to a close observer.

It is not probable that a teacher will find himself so situated that he will be able to take many of these excursions suggested in connection with the teaching of the industries. He may be in a position to take only one. Few are so placed that that would be an impossibility. A field trip or an excursion of any kind must be planned with the utmost care in order to make the work as profitable as it should be. The children are filled with excitement as a result of their escape from the confinement of the schoolroom, and unless their energy is directed the excursion will resolve itself into an informal picnic. A class should never be taken on a trip of any description

without knowing definitely what they are to look for. If the object of the expedition is the study of harbors, that statement is not sufficient. "We are going to study harbors" would leave a child very much in the dark as to his responsibility in the matter. It would be better to say, "Let us see if we can find out exactly what we mean by a 'harbor,' and why ours is such a good one." Even this is not a preparation for the trip. It is simply a statement of the purpose of the expedition, and should be followed by a preparatory lesson that will tend to direct observation toward the essentials. Suggestions like the following might be made:

"Suppose a ship were driven by a storm against a coast like this (show a photograph of a straight, rocky shore); what would happen? I want you to think of this before to-morrow and tell me what would happen if the same vessel were driven in along our shore."

"What calamity has happened to this vessel? (A photograph showing a vessel going to pieces on a bar.) Keep this in mind until to-morrow, and see if our vessels are in the same danger."

"Look for all the different ways that are taken to avoid danger. Find out, too, whether many or few vessels come in at this port. Perhaps you can tell from what countries some of them come."

Suggestions like these will direct the children's attention to the main requirements for good harbors—a shape giving protection, a sufficient depth of water for the passage of vessels, a size large enough to allow much shipping, and the various methods established for the protection of trade. At the time of the outdoor work the teacher should be sure that the children have the object of the trip in mind, but he should throw the initiative upon them and let them solve the problems one by one as they are

brought up. He should occasionally suggest a question if he finds it necessary to direct the course of the work. He will find the children so full of queries that they will need direction rather than stimulation. The children should be held responsible for an intelligent account of their expedition, either orally or in the form of a written exercise, as a home assignment.

There is not the slightest use in ignoring the fact that the successful conduct of an excursion in a city is a difficult matter. Where large numbers are involved, assistants must be secured to help the teacher. In many cities the "substitute teachers" might be called upon to perform this service. In other cases older pupils might be put in charge of younger groups. A person in authority should lead the line and one should follow, to prevent any of the pupils from straying. Count must be kept, too, in order that all may be reassembled after a halt. Sufficient discipline should be maintained that the whole affair may be conducted in an orderly manner. The children should be taught promptly to obey signals given by the teacher, to halt, to reassemble, to come together for instructions. The excursion is worth all the effort put into it. Not the least return will be the feeling of comradeship established between the children and the teacher.

Observational Work in the Schoolroom

Much observational work may be conducted in the schoolroom and will be found valuable as giving meaning to topics that otherwise would be treated in too impersonal a way. Much of the work on the earth as a globe, the bugbear of pupils and teachers alike, would be comparatively simple if children were taught to use their eyes. The usual method of dealing with this subject is a simple one. The duty of the pupil is to memorize the statements

in the text as nearly as possible, while that of the teacher is to hear the lesson. It may be taken for granted that the period devoted to this work will be interrupted by neither questions nor discussions, for where this method is in vogue it is very evident that the teacher feels that he is on anything but firm ground, while the children are too much in the dark as to the meaning of things to be able to formulate inquiries.

If a series of simple observations were introduced throughout the grades, this stultifying process and absolute waste of time would be eliminated, and when the children were really introduced to the study of "the earth as a globe" a foundation for the work would have been laid and they would find themselves able to cope with it. There is no simpler observational work than the determination of the cardinal points. With the younger children east and west should simply be associated with the rising and the setting of the sun, regardless of its seasonal variation. South should be taught from the position of the sun at noon. Care should be taken here to show the children that the sun is not in the zenith at noon in our latitude. This may be done by pointing a stick directly upward or driving it into the ground in an upright position, while a second stick is pointed at the sun, thus showing the angle between the zenith and the sun. If this experiment is repeated at intervals throughout the year, the fact may be established that the sun is always in the south at noon in our latitude, the general belief to the contrary notwithstanding. True north, according to the pole star, may be taught without difficulty if careful directions in regard to its position in the heavens be given. If a diagram of the "dipper" be drawn and the relation of the north star to the "pointers" explained, there should be no trouble in locating it.

There should be much training in direction indoors and out, so that the points of the compass will be associated not only with directions on a map but with the daily activities of life. If sufficient attention is given to this subject, observation will be stimulated, objects will be seen in their relations, and gradually that most desirable asset, "a sense of direction," will be developed.

Opportunity should also be given the pupils of judging the time of day from the position of the sun in the heavens. They will gradually be able to do this with a good deal of accuracy. The value of this exercise, however, does not lie primarily in the ability to judge the time correctly, though this is sometimes convenient. It is simply another opportunity of leading children to observe and to interpret nature—a step toward establishing a practice which will result in the substitution of intelligence for ignorance in regard to the world about them. One period in the day, that of noon, should be determined exactly. This may be found by means of a shadow stick. The length and direction of the shadow should be marked at regular intervals for a short time before noon, and at the same intervals after noon. Shadows of the early morning and late afternoon should be compared in length and direction with the noon shadow. It will immediately be apparent that the long shadows of morning and evening accompany a sun low on the horizon, while the shortest shadow must be associated with its meridional position. The diurnal change in the length of shadows will be seen to have a parallel in their seasonal variation, the low sun and the longer shadow of winter corresponding with the morning and evening condition, and the higher sun with the shorter shadow of summer, resembling that of the middle of the day. In these observations particular attention should be given to the noon altitude of

the sun at the time of the winter and the summer solstices —the periods of extreme variation. The directions of the shadows in the early morning and in the late afternoon at the time of the equinoxes should be compared with the directions at the same time of day at the summer and the winter solstices. Pupils should also be reminded to note the position of the setting sun at the different seasons. We can scarcely expect them to observe the rising sun, but these observations will prove sufficient to fix in their minds the apparent northward shifting of the sun in spring and its southward shifting in autumn, as well as the points in regard to its rising and setting which are involved—that the sun rises exactly in the east and sets exactly in the west at the time of the equinoxes only; that during the summer both rising and setting must be respectively to the north of east and west, and in the winter to the south of these points.

It is important that these facts be based on repeated observations. The verbal statement, unsupported by observation, is likely to result in a confused notion that the sun either rises or sets in the north during the summer, or perhaps that it succeeds in doing both, and to the south in winter.

Much help in the teaching of latitude and longitude may be obtained from observational work. The noon shadow, in giving us a true north and south line, fixes our meridian, a line drawn at right angles to this our parallel. If these lines are drawn on the floor of the schoolroom and properly labeled, there will be less doubt when pupils reach the high-school age whether parallels run east and west and meridians north and south, or vice versa.

In the upper grades children should be allowed to find their own latitude. This can easily be determined at the time of the equinoxes at noon, when the sun is

vertical at the equator. As latitude is angular distance north or south of the equator, it remains only to find our distance north. This may be done by driving a stake into the ground in an upright position, while a second stake diverging from the base of the first points toward the sun. The angle between these stakes, which may be read by means of a protractor, subtracted from 90°, is the latitude.

If a clock is kept in the schoolroom set according to Greenwich time, the difficulties of longitude and time will be lessened if not eliminated. Knowing Greenwich time, and the time recorded by the official school clock, the longitude of various places may be determined, their local time as compared with Greenwich time being given. Greenwich time in the room will also serve to impress the fact of the relative difference in time going eastward and westward, especially if the clock keeping this time be placed on the appropriate side of the room. This point occasions so much confusion that some such device should be resorted to in order that students may learn before reaching college years that time is later going eastward, earlier traveling westward.

A place should be found at some point in the course for the study of the phases of the moon. There is no special need of an understanding of this subject except in connection with the work on tides, but it should not be deferred until this subject is taught. Both topics require a high degree of visualization, and each presents so many difficulties that a thorough knowledge of the one, gained through careful observations extending over a considerable period of time, should be at the command of the pupils, ready to be drawn upon when the second is under consideration.

In the study of the phases of the moon the distribution

of light as it appears to us at new and full moon and at the quarters should be noted, as well as the relative positions of the sun, earth, and moon at the same periods. Care should be taken that the relation between these points be realized—that the light distribution as it really is be understood, and that its appearance to us be seen as resulting from the position of the moon with reference to the earth and the sun.

The weather furnishes one of the most satisfactory subjects for observational work, and will be found adaptable to pupils of all ages. Even the little children may keep weather records with profit. These should be very simple, non-instrumental observations of temperature, wind direction and velocity, state of the sky, and precipitation. In regard to velocity only a few grades should be expected, as a calm, a light wind, and a strong wind. Temperature should be registered as warm, hot, cool, cold; the sky as clear, partly cloudy, cloudy; and precipitation as rain or snow. Colored disks of paper are often used to represent the condition of the sky—yellow or orange for clear weather or for sunshine, gray for partly cloudy, and black for cloudy.

As the pupils grow older more accurate observations should be kept; both the thermometer and the barometer should be read, and more detail in regard to wind velocity and the state of the sky may be exacted. The table given below may be followed or somewhat modified as the teacher may wish.

Date	Hour	Pressure	Temperature		Wind		Clouds		Precipitation		
			Dry bulb	Change in 24 hours	Direction	Velocity	Kinds	Amount of sky covered in tenths	Time of begin'g and ending	Kind	Amount

Wherever records are kept observations should be made at fixed periods; in the case of the younger children, perhaps, between half-past eight and nine o'clock in the morning; in the case of the older ones at the same time in the forenoon and again in the afternoon just as school begins. If the observations are irregular as to time much of their value will be lost, as comparisons of conditions from day to day will not have the same meaning.

The weather should be one of the most interesting topics to study on account of the strong control which it exerts over our daily lives, but no subject proves a greater trial than does this one if it is not handled with care. The keeping of records is interesting under two conditions. In the first place, they must lead somewhere; and in the second, they must be kept for selected periods only. Where data are collected and cast aside without making comparisons and deducing generalizations, more than time is wasted, for the pupils not only put forth effort without getting any adequate return either in interest in the subject or in knowledge, but also develop a distaste for the work perfectly natural under the conditions and due neither to natural depravity nor to any lack in the subject itself. There is no excuse for accumulating data from day to day unless we deduce generalizations from them. When weather records have been kept for a sufficiently long period of time they should be used as the basis of class exercises. The correspondence between wind direction and temperature, for instance, should be noted. The children should find out how many days of south wind they have recorded and what the temperature was in each case—how many days of north wind and the temperature on those occasions. They may then deduce a tentative generalization which later observations will either verify or overthrow. In the same

way the relationship between east winds, state of sky, and precipitation should be brought out, and the weather that the west wind brings us. Weather records should not be kept for long periods at a time. There is nothing to be gained by this method, and much to be lost in the gradual decrease of interest. It will be found much more satisfactory to keep these records during selected periods, perhaps for one of the coldest winter months and the warmest month of the school year.

In the upper grades pressure should be shown to be the controlling element of the weather. A typical day when the "low" is well marked should be chosen as an introduction. The barometer should be read, the wind direction, state of sky, precipitation, and temperature discussed and recorded. As the low passes eastward, perhaps on the following day, the same observations should be made, and again when the "high" has control. The pupils will soon learn to associate clouds and rainfall with "lows" and clear weather with "highs." Comparisons should also be made between the front and the rear quadrants of the low or between the weather conditions as the center approaches and passes. The portion receiving the ocean winds will naturally be seen to have heavier clouds and precipitation than will that receiving land winds, the eastern part of the low in the eastern United States having more rainfall than the western. The daily weather map should be studied carefully in connection with this work on lows and highs in order to help in the interpretation of the facts observed. The winds blowing spirally toward the center of the low, shown graphically on the map, must be seen, that the distribution of moisture may be understood, while many other features represented are equally important. A combination of observations and map study makes it possible to forecast the

weather, the position of the low or high to the west being known, its general direction of movement, its approximate rate, and, in addition, close observation at one's own station, that changes in pressure, wind direction, and temperature may be detected.

The study of the various forms of condensed moisture, as dew, frost, fog, clouds, rain, hail, and snow, belongs in part to geography and in part to nature study. The cause of condensation, whether it occurs in a liquid or a frozen form, and its distribution, interest us geographically; the exact form that the particles assume, as the varied shapes of the snow crystals for instance, or the many cloud forms, does not concern us particularly as teachers of geography.

The question of the process of condensation involved in all of these forms is so similar that the knowledge gained in one may be applied to the others as they are successively studied. This process is more tangible in the study of dew than in any other form, especially where it is artificially produced and every step of the process may be watched; therefore this form of moisture usually serves as the introduction to the subject. In performing this experiment a bright tin cup should be partly filled with cold water. If ice be slowly added, the cup will gradually become so chilled that it will lower the temperature of the air about it, causing the moisture in the air to condense on the surface of the cup. If a thermometer be used to stir the water as the ice is added, and if the temperature be read the moment the film appears on the cup, the temperature of the dew point will be found. The value of this experiment lies in the fact that it shows clearly the effect of a lowering of the temperature upon the capacity of the air for moisture. This knowledge should be applied in the later work on rainfall in the attempt to

supplant the theory in regard to its cause that every child apparently instinctively holds,—that the clouds strike the mountains, break, and give up their rain.

Where it is possible, the pupils should observe the influence of clear and cloudy nights upon the formation of dew and frost, as well as the relation of these forms of moisture to surface features. The country child knows that dew and frost appear first in the valley and later on the hilltop. This we cannot usually teach by observation in the city, but the same principle may occasionally be illustrated by the appearance of a mass of fog lying in a valley,—the occurrence of all of these forms in low-lying areas rather than on the higher slopes being due to the cooler air which, under the pull of gravity, accumulates in the valleys.

A few moments a day devoted to observational work in some field will widen the horizon more effectually than will many times the same amount of effort expended on the textbook. Time for this work should generally be taken from the geography period; sometimes only a small part of it will be needed, sometimes all of it will be required. Oftentimes a few moments before or after school will be sufficient to start the children on some line of investigation. This work should of course be done generally under the personal supervision of the teacher, but the pupils should be encouraged to keep their eyes open and their minds receptive for the lessons of nature wherever they may be. If encouraged to describe experiences that they have had, perhaps a heavy storm in which they were caught, or trips to the shore, or what they have seen after a heavy rain, they will gradually become more observant and, as this habit becomes established, will unconsciously learn more of the world about them than our most painstaking work in the classroom can accomplish.

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CHAPTER XII

GEOGRAPHY IN RURAL SCHOOLS

The Possible Richness of Geography in Rural Schools

As a rule most of the courses of study and the other educational guides available for geography teachers have been prepared for city school systems, with little thought of their adaptability to the conditions pertaining in rural communities. The recent interest in this country in the improvement of rural education has caused many a teacher and leader in various subjects to consider seriously, and possibly for the first time, how far the ways of handling his subject, which he has learned and practiced amid urban conditions, are really adapted to the conditions in rural communities. Geography has suffered very much in the past because of this one-sided viewpoint, in spite of the fact that many of the topics usually included in geography courses are specially fitted to be taught better in rural than in urban communities.

Even teachers brought up in the country and perhaps never familiar with other than rural conditions have failed to see the opportunities in geography teaching that surrounded them. This has been largely because their attention has never been called to such opportunities or because, in their subservience to authority, they have concluded that what was not definitely included in their texts and courses of study was thereby distinctly tabooed as out of place, unscientific, or "unpedagogical."

Yet, as a matter of fact, geography has always been particularly well adapted to be better taught in the country

than in the city schools. Even though it were the old-fashioned type of geography which called for definitions of objects and not the relation between life and the earth, where could rivers, hills, divides, and similar items be better taught than in a rural region where these natural features were unobscured by man-made inventions like sewers, pavements, and concentrated city blocks? The country boy who has roamed the hills and valleys about his home knows much from experience that is geographically worth while. It may not be set in the exact phrases of the textbook or course of study, but so much the better. Yet this information has not been brought out, analyzed, developed, and classified or used as points of departure as it should have been.

The ordinary geography text or course of study does not as a rule need much, if any, change in order to be adapted to rural conditions. The great change should be one in the method of approach. In much of the introductory work children can, in the rural schools, deal with things rather than with the representations of things as must be the case in many city schools. Hence observational work, which is vital in any real study of geography, can be pursued in rural regions as nowhere else. Yet, as a matter of fact, in great numbers of rural schools all the common terms and definitions used in the description of land and water forms are taught from books rather than from the things themselves. The writer, as a pupil in a small rural school, played at recess and at noon in the neighboring stream, the schoolhouse was cozily situated amid some striking land features, but these surroundings were never used in school work. Valleys were illustrated from pictures in the text and not from nature, and the same thing was true of all the phenomena of the geography work. This failure of opportunity is not a question of one locality; it

is widespread and persistent. The materials are available, and not even a special course of study is necessary to make it possible for teachers to use the features of their physical surroundings. The facts are too glaring and obvious to need any special attention in a course of study. Any observant teacher who is not bound by the pages of a text can readily use the local illustrations and should be made to realize that such a use is necessary to make text materials meaningful and clear.

The local applications and illustrations of geography are not wholly confined to the physical features, however. The relations between the physical features and life conditions can be more easily observed in the country than in a city. The way streets and railroads are laid out; the relation of fields, orchards, and pasture and waste land to slopes and soils; the relation of ground water to slopes, soils, and crops; the reasons for the location and growth of towns or villages, or for the location of manufacturing establishments, and many other social conditions may be readily studied. In certain parts of the country where farms are laid out in sections and quarter sections the reasons for the boundaries can be understood only through showing the relations to latitude and longitude lines, which of course are geographically determined. The relation to surface features of the use of machinery, of good roads, of modern conveniences for transportation and communication—all these and other similar topics valuable from the industrial side may be included to advantage.

Rural life is not merely a question of improved economic conditions, however, and no subject ought to be taught, in urban or rural localities, purely with a view to making a pupil a better wage earner, however important, practical, and necessary such a purpose is. Rural life is more than a question of money making, and rural education

should not be framed solely "to keep the boy on the farm" by showing how he can get a better money return. Rural conditions are recognized by many people as the most pleasant and healthful for living, and living involves health and comfort as well as the seeking of property. Many of the topics studied in geography can readily be applied to good living, and comfort and health in many rural regions would be better secured if some of the simple principles of geography were followed in house building and location, for instance, as well as in many other ways. Some of the topics which may well be studied in detail and applied to rural conditions are indicated below. Obviously, all localities are not alike in their offering of possibilities, and a choice must be made that will fit the special conditions of any one region.

The Importance of Slopes

The most obvious features in any landscape are the slopes, which are or ought to be considered in agriculture, in the choice of a site for a home, in the building of roads, and in an infinite number of ways. Regions of gentle slope are often poorly drained naturally, and hence the necessity of underground drainage; roads and railroads can run in almost any direction, and as a rule farms are laid out more regularly and roads are more systematically placed in regions of gentle slopes than in those of steep slopes. The ease of tilling gentle slopes, the strength of winds and the need for windbreaks in large regions of this type, are facts familiar to all but often little appreciated.

In more rugged regions we find, as a rule, the houses and tilled fields, the roads and railroads, concentrated on the more gentle slopes, and the forests and pastures and waste lands, and in some cases the orchards, placed on the more irregular areas. Almost any country boy

will be interested in making a simple map of his home farm to show the relation of crops and usage of the land to slopes; he will know the warm and the cold sections, the slopes where the early spring flowers are found and where the best fruit grows, just as he knows many other personal things that he has learned by experience and which illustrate geographical principles very readily if once his attention is called to them.

Soil

The soil is another topic that may be made the basis of some interesting lessons for children. The kind of soil for corn, potatoes, cotton, wheat, or fruit may be studied by samples or on the ground, the relation of soils to slope, to their ability to hold and to transmit water, and the effects of drying and tilling may readily be shown. A large part of any farmer's work in the growing season is devoted to tilling his crops. Tillage, or stirring the ground, is a means not only of killing weeds but of keeping the soil thoroughly stirred so as to save the ground water that is constantly rising to the surface by capillary action. It is also a means of permitting rain to soak into the ground. Tillage is distinctly related to the question of ground water, and a farmer's boy who understands this has gained a point of information of great practical value. The reasons for mulching soil by plowing in straw or of covering orchards or fruit beds with straw are the same. Similarly the advantage of a grass cover in preventing a rapid run-off after a rain and of conserving the forests may be shown to be related to the question of ground water. In those regions where summer fallowing of fields, or dry farming, is followed, the same principle holds true.

Another topic that has its interest is that of soil motion on hillsides. The movement of fences and stone

walls downhill, the tilting of headstones in a cemetery or of the stone facings on sidewalks in some city streets, are due to this creeping of the soil. Many of the repairs to fences that a farmer has to make in the spring are due to the movement of the soil, to the thrusting of the frost, or in some sections to the glacier-like movement of the snow on hillsides—all topics that appeal to any country boy in regions where they occur.

Drainage

The problem of drainage also has its geographic side, which is interesting and the study of which will be helpful to almost any country-bred child. The necessary amount of ground water for crops is a fundamental factor in agriculture, and the conserving of this ground water is the essence of tillage, as has already been indicated. Ground water feeds wells. Therefore a permanent well must be dug below the permanent level of ground water, and not on the tops of hills, as a rule. Ground water is higher in the ground in wet seasons than in dry. Hence it is not healthful to sit on the ground when the ground-water level is high. Picnicking and camping out are not matters of temperature and rainfall only, but questions in part of the depth of ground water below the surface of the soil. Drainage is a matter of removing ground water and run-off in excess of the desired amount. Irrigation is the reverse—it is the problem of adding water to the soil where the ground water is permanently at a low level. On many farms irrigation would be as valuable in the summer as is drainage in the spring.

But drainage does not have to be taken into account in the question of agriculture only; it is or should be, in all rural regions, considered in reference to the location of buildings and wells. A study of local slopes and soils

might readily be made in most rural regions in relation to drainage and water supply. A similar study of the relative locations of houses, stables, and barns would be suggestive, helpful, and practical in many localities. The necessity of protecting drinking water from contamination is one of the most important problems in many rural regions. It is a problem for the individual usually, and many adults are ignorant or careless in reference to the matter; hence the desirability of showing in geography the relations between hygienic living and the geographic features.

Drainage, however, is not merely a question of movement of surface or ground water. A good air drainage is as important as a good water drainage in house location. The hilltops in a rugged or rolling region may be more exposed to wind but they are warmer in the winter mornings than the lower valleys, just as they are in the evenings and nights in summer. The coolest air on fair nights is generally to be found in the low regions, and hence the disadvantage of locating a home in the valley. This is not only true in the winter, when the lower temperatures are in the valley, but also in the summer, when the night air is frequently too damp for comfort in valleys, while on the hills it is drier and more pleasant. Houses in deep valleys also have short winter days, because the sun in its course is shut out by the surrounding hills. These valley shadows persist so long in the morning and the sunset comes so early in the afternoon that the winter days are more dreary than they are on the hillsides.

Thus the most favorable position for a home in a rolling or rugged region is on the mid-slopes, protected by the hills from the wind and yet above the cold night air of the valley bottoms. On the mid-slopes the cool air is experienced at night, but it is not as a rule damp. The best position from the standpoint of geographic location in

most of the eastern part of the country is a southwest slope facing the prevailing winds of summer and the strongest sunlight of winter.

Good Roads

Another topic that ought to be included in a course in geography for rural schools is the question of good roads. Good roads are not for the automobilists or the bicyclists, or even primarily for them, though the present interest in good roads is to a large extent due to the initial action of rapid-travel enthusiasts. Good roads are for the farmer and for every one who wishes to travel quickly from home to store, church, grange meeting, or the neighbor's. Good roads are economically of great significance, as they bring markets nearer to the farmers in time, reduce the cost of transportation of farm products, expedite the delivery of mail, reduce the wear and tear on horses and wagons, and help in every way to reduce the isolation of rural life.

Children should compare good roads with bad roads, learn the necessity of a well-rounded road that sheds water, and see its advantage over the not uncommon country road where the water after a rain runs in the horse track and where in spring the mud may make it well-nigh impassable. Good roads should be studied as a cause of better social and economic conditions and as an effect of the economic demand for quick transportation of crops to markets. They should be studied further in reference to the available road material, for in most localities a careful selection and use of the rocks and natural road materials near at hand would insure better roads than now exist. Experiments may be conducted in the schoolroom to show what kinds of materials hold water and what drain readily; what readily pack under

travel and what wear out or are easily worn into ruts. Children should compare the new material freshly put on a road as to fineness, grittiness, and general usefulness with the worn-out material to be found beside the road after a season's use; then conclusions should be drawn as to the advisability of scraping such secondhand comminuted dust back into the road with the thought of its being useful for road purposes, as is so frequently done where road machines are used.

Climate and Weather

The questions of our relations to climate and weather are fruitful topics for discussion in any part of the country. Some of the relations are indicated in the early portion of this chapter, but many more may be readily worked out by any teacher. The advantage of grass around houses rather than bare ground is a topic that, rightly presented, would give many children a suggestion as to how to make their homes more inviting and pleasant. Grass ground is cooler than ground with no vegetation covering it, and hence the near-by house is cooler in summer. Also, the rays of heat and light are reflected more or less from bare ground, and the house therefore receives both direct and reflected heat. From these two standpoints, as well as from the standpoint of freedom from dust and from that of attractiveness, the advantage of grass about a house or schoolhouse may easily be shown.

The use of windbreaks in prairie regions, and the advantages and disadvantages of windmills as a source of power, lead to a study of the average velocity of the wind in the area and to its economic importance.

The way houses are built to withstand cold or heat, the type of roof used to shed water, the use made of local materials in house building, the general direction that

cowsheds face in winter, the best situation for henhouses, the direction in which rows of vegetables should be planted in the garden to secure the sunlight most evenly, the color and character of clothing used in the several seasons, to say nothing of the ever interesting seasonal games of the boys and girls, are a few among the many topics that may profitably be considered in any rural community.

If the teacher can work out the conditions of soil, rainfall, sunlight, temperature, and drainage that favor the success of any crops or industries particularly important in the locality, another large, vital, and valuable field of interesting work can be opened up in which pupils will be intensely interested. Such topics tend to develop local patriotism and the love for the home locality, and are well worth cultivating. The whole field of local customs and habits, of seasonal dress, of seasonal variation of occupation, and similar topics offer a host of interesting and valuable problems which cannot be treated generally because they vary with any given locality.

As has been mentioned above, the study of rural life must be something more than the study of how to get more money out of the farms and local industries. It must be a consideration of how to get a better living in the broader sense, and the more each of the time-honored subjects can contribute to the development of this problem, the better for the subject and the pupils. Geography is so personal to every one that hardly a problem in life can be studied without involving the geographic background. If we are to lay the foundation in the elementary schools that will make boys and girls want to stay on the farms we must not merely try to teach them to make more money; we must teach them the beauties, the wholesomeness, and the advantages of rural life, make them acquire a love for the home region and an ability to make life more real,

more interesting, and more valuable as life, amid rural conditions. To this vast and almost untouched problem geography can contribute many helps, and rural-bred teachers, with the love for the soil and with a viewpoint that is not urban or ultra academic, can help enormously if they will but see the problems about them which have a basis in real, personal geography.

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CHAPTER XIII

INDUSTRIAL AND COMMERCIAL GEOGRAPHY

Modern Viewpoints in Geography Teaching

INDUSTRIAL and commercial geography have come into school geography within the last few years as a strong and extremely valuable part of the work, but as yet there is no general agreement as to the way in which these phases of the subject should be taught or as to the proportionate time to be allotted to them. In fact, these phases of geography teaching are involved in the larger problem arising from the justifiable demand for vocational training in the upper grammar grades. In discussing the questions involved in this large topic, it should be borne in mind that the position of geography in the intermediate grades, its opportunities and obligations, varies according to the point of view of the course of study as a whole.

If the central thought of the work in the elementary grades is the study of the gainful occupations of man, then geography has much to contribute to the study of industries, and the task of the worker in geography is to see that, in the intermediate grades, the simpler geographic conditions favoring the development of any leading industry in a given locality are clearly brought to the front.

Where this early industrial work centers about the unifying thought of the distribution and use of the raw materials necessary for food, clothing, shelter, fuel, and in the arts, then the geography work will have to do also with the earth conditions which underlie this distribution.

In the upper grades where the object is the vocational

training of pupils in certain of the great industries of the world, and where the work is deliberately practical in nature, then obviously commercial geography will have an important place as a necessary part of the development of an understanding of the industrial and commercial progress of the world.

In those schools where the course of study is not divided so as to permit the introduction of vocational training in the upper grades, the same difference in the point of view in geography would seem to hold. In the intermediate grades the emphasis should be on the industrial life of peoples in different regions and the reasons for the distribution of industries in a given country; in the upper grades the emphasis should be on the commercial relations between peoples or regions because of the differences of industrial products and the position that a region holds in world trade, with the reasons therefor.

Industrial Geography

Whichever viewpoint determines the plan of organizing the work from the fifth to the eighth grades, the problem of the geography teacher is relatively simple in scope, however hard it may be to organize the work effectively. In either case he is not called upon to go beyond the domain of his subject as the study of the earth in reference to man, and to include in his course, or in his time schedule, any study of the technical details of industry, except where those details have a geographic foundation. Such details are in general not a part of geography and therefore they should not be so considered. Where the plan of the course of study will permit the study of technical processes as a part of the vocational training, these details must and should be studied as things by themselves and not merely incidentally, as must be

the case when they are included as a part of geography.

The details of industrial processes as seen in any great industry or group of occupations are largely the result of human invention. Hence they are only very remotely, if at all, germane to geography. There is a geographic reason for the distribution of corn or wheat and for the necessity of tilling any crop after it is planted. There is a certain amount of geographic reason for tilling by power and not by hand in certain parts of the country, but there is little geography in studying the forms of machines or the order in which machines are used in tillage or in harvesting. Therefore if we would confine our attention to geography, and help to make it less of a catchall than it has been in the past, we should not go into any more details then are necessary for clearness, with the possible exception of teaching details of technique that have had an influence in determining changes in other phases of geography. The invention of the round cotton bale has revolutionized the cotton industry in many ways and has had a world-wide effect commercially. Such a fact deserves emphasis as a geographic cause of moment to the world.

Few details are necessary from the standpoint of clearness, in most cases. In fact, the geography of any industry can better be taught around a simple illustration than around a complicated instance in which the development of invention has obscured the geographic foundation. For instance, a simple country gristmill, in which the processes of applying the power to the grinding of grain may be easily seen, is a better illustration of the geography of flour milling than is a complicated Minneapolis flouring mill, with all the varied steps in the process of making fine bolted flour by means of intricate machinery. In the former case the geographic side is prominent and

obvious; in the latter it is obscured and can be developed only with difficulty.

Excursions to complicated industrial establishments are also as a rule confusing to children. The chief result, even for an adult who goes to the establishment with some idea of what is to be seen, is a confused impression of whirling wheels and rapid changes in form of materials. The teaching of complicated industries in geography by means of excursions is, like many other topics, of value if done by a master teacher but of questionable worth if in the hands of a novice unfamiliar with the intricacies of geography or the details of industrial processes.

Another argument that is often brought forward for the intimate study of industries, and particularly of the primitive industries, is that the child passes through, in his own life, the mental stages of development through which his race has passed in the course of evolution,—therefore that a child is naturally more interested in the primitive life of peoples than in the adult life to be seen around him. This argument is good in so far as primitive industries illustrate geography more clearly than the more complicated industries of a similar kind, and hence are better illustrations for study, provided these simple illustrations can be seen in a natural way about the child. The argument is weak, however, on another side. Most children look forward to adult life as a goal to be reached as soon as possible. Every active-minded, manly boy feels insulted if he is patronizingly called a little boy, but swells with pride if he is addressed as a little man. His interest is in being a part of the larger life about him, as he sees it illustrated by the activities of his parents. He wants to take a part in that life and hence is more easily interested in the study of the reasons for adult life than in the forced study of primitive industries.

The consideration of primitive industries in most localities, therefore, should give way to the study of the reasons for the home and local industrial life with which children come in contact every day, perhaps more intimately than the teacher has ever done.

From the standpoint of immediate use, or of preparation for strong geographical study in later years, there seems to be little place for the emphasis of the details of industries, as a part of the geography course. Yet there is a need of analyzing clearly and forcibly the geography behind the industries of a country so that children may know the reasons for the distribution and general character of the industries and secure a basis for comparison in studying the lives and occupations of distant peoples living amid different environments.

The Point of View of the Teacher in Industrial Geography

The primary object of studying industrial geography, from the standpoint of its contribution to the geography course as a whole, is to give an understanding of the geographic reasons for the location, character, and distribution of industries in our own country and in the world at large. Hence it is necessary that teachers should have in mind the fundamental geographic phases of industries in order that they may select and order the details to be studied so as best to lead to a good understanding of the geographic side of the subject.

The industries and occupations of the people of the world may for convenience be grouped under a few simple headings, in each of which the underlying geographic conditions are somewhat different from what they are in any other group.

These groups include agriculture, grazing, lumbering,

fishing and hunting, mining, manufacturing, and commerce. To these must be added another heading which will include centers of habitation where people are grouped together because of the scenic, historic, or other features that make the locality a resort for a large number of persons. Such localities may for convenience be grouped under the head of scenic resorts.

People the world over tend to live in groups, and they get their means of living from one or more of the several occupations noted above. In some cases we find several occupations in one locality, as where agriculture, grazing, lumbering, and hunting are followed by farmers on different parts of their farms at the same time or possibly at different seasons. The geographic features, however, are no less distinct here than when the occupations are more isolated in their distribution. Let us then examine with some care the geographic elements involved in the different groups of human occupations.

Geographic Basis of Agriculture

The geographic conditions that determine the success of agriculture in any region are slopes that will retain the accumulated soil and be sufficiently gentle for tillage, a good soil, a climate favorable for the use of the soil, and such a relation to a possible market that the crops may be profitably sold. The relative importance of these several factors determines the success or the character of agriculture in different regions. The Mackenzie has as good soil and as favorable slopes for agriculture as the lower Mississippi, but it is not favorably situated as to climate or in reference to regions of comparatively dense population, and hence is not an agricultural area. The distribution of the corn and of the winter and spring wheat belts of the United States is largely a question of

differences in climate, though differences of soil are of some moment. Other illustrations might be given in great numbers, but in all cases the same determining climatic conditions would appear with different values. Hence teachers need to keep these factors in mind and bring out their relative importance in the study of agriculture.

Geographic Basis of Grazing

Grazing, which includes dairying, is determined in its distribution and character by the same geographic conditions that influence agriculture, but these conditions may not be of the same quality. Except in certain dairying regions the soil, the slopes, or the climate need not be as favorable for rapid plant growth as in the case of agriculture. When the slopes are too steep for tillage, the soils too poor, or the climate too dry to support a continuous grass area, cattle and sheep can harvest the crops more easily than can man. Hence such regions, broadly considered from the standpoint of the country as a whole, or parts of farms with these conditions, are generally devoted to grazing.

In dairying regions, devoted to making milk, it is necessary that a good market be accessible within a few hours. In regions where animals are raised for food or for wool, or where butter and cheese are produced, proximity to market is not so necessary a factor.

In some regions we find grazing dependent upon agriculture, as when cattle and hogs are raised in great numbers in the corn belt. This is of course due to the fact that corn is too bulky to enter largely into commerce, as does wheat, and that therefore it is more profitable to feed it to cattle and hogs on the farms.

The slight differences in natural conditions that determine the relative success of agriculture in one place

and grazing in another are the essential geographic elements, the understanding of which makes the distribution of these occupations over the world meaningful and worth studying in school work.

Geographic Basis of Lumbering

The geography of lumbering is in many ways similar to the geography of agriculture and grazing. In our own country the regions which have soil or slopes unfavorable for agriculture or grazing, or which are far removed from centers of busy life, but which have a moist climate favorable for the growth of trees, are covered with forests and may be centers for lumbering. These controlling conditions are seen in the forest belt extending from Maine to Minnesota, on the slopes of the Coast Ranges and Sierras, and in the high plateaus of the Southwest, determining the distribution of trees in these great regions of forests. It is climate and soil that determine the occurrence of forests on the great plain of the South Atlantic States, on the slopes of Central America, in the valley of the Amazon or of the Congo, or in any other part of the world.

Whether these areas will be devoted to lumbering or to some industry that makes use of their riches, depends on their accessibility and the value of their products in world trade. These conditions should be developed through the study of forests and lumbering, should be illustrated by instances, and compared with the conditions favoring agriculture or grazing. With such an understanding of the natural conditions favoring these three related occupations, and of the distribution of agricultural, grazing, and forest areas, pupils will be able to understand the importance of these natural areas in determining the distribution of industries and of population

over the world, and will be able to compare large areas in a definite way. The development of such an understanding of large geographic units leads to the best kind of generalizations of permanent value to the pupils.

Geography of Hunting and Fishing

The distribution of fishing and hunting illustrates very clearly the influence of geographic conditions. Fishing and hunting for pleasure are largely confined to relatively inaccessible regions where nature is still in a wild state.

Hunting for profit is an occupation in scantily populated regions where the necessary vegetation for the support of the life of large animals abounds. Such are the hunting areas of northern Canada, Siberia, and Africa, the chief fur and skin producing regions of the world. Fishing for profit is centered at those places which are most favorably situated in reference to fishing grounds. Fishing regions in the ocean are over shoals, and the good harbors nearest to such fishing regions are usually important fishing centers. Similar conditions influence the distribution of fishing centers in great estuaries like the Columbia River or those of Alaska. Fishing and hunting being primitive occupations, similar in character to what they have been through the ages, the influence of geographic conditions in determining the distribution of these occupations is especially clear.

Geographic Basis of Mining

Mining is confined to those regions in which the rocks of the earth crust contain materials of value to man, and which he has already begun to exploit.

Whether it be water from artesian wells, gas or petroleum, valuable metals, rocks for building or other

purposes, clay for pottery, sand for glass making, or any other material secured from the rocks of the earth, it is the character of the rocks that determines the occurrence of mining. Certain products are confined to one kind of rocks, or rocks in one position. Silver, lead, gold, copper, and certain other ores are usually found in rocks that have been mountain built; clays are most worked in plains where the rocks have been little consolidated; gas, water, and oil are found in rocks which are nearly horizontal and unbroken, and where the conditions for the accumulation of these products have been favorable. These are but a few of the many illustrations of the close relation between rocks and the distribution of mining. An understanding of these simple but widespread relations will make the teaching of the distribution of mining worth while both to teacher and pupil.

Geographic Basis of Manufacturing

The industries and occupations thus far outlined furnish the raw materials that are used in the form in which produced, either at the place of production or after entering into trade, or are manufactured into some other form before being used. Manufacturing consists of the application of power to changing raw products into finished products. The power may be that of water, steam, or electricity, of animals or of men and women.

The rug maker of Persia, the lace maker of Switzerland, the glass or steel worker of Pittsburgh, and the cotton weaver of Massachusetts or South Carolina are all making use of some kind of power. The success of their labors depends on the availability of power, of raw materials, of a market for their products, and of a supply of labor. These elements, each with a strong geographic foundation, enter into the geography of manufacturing,

and the analysis of any manufacturing center will bring out their relative importance. In some cases special geographic conditions also come in, as the influence of climate on cotton manufacturing in Massachusetts or England, and on flour milling in Minneapolis or Budapest.

The four elements noted are the most important and the most general in their distribution. In some places manufacturing succeeds where one of the elements is unfavorable, because certain other of the necessary conditions are so very favorable. Steel making is important, for instance, in Pennsylvania in spite of the fact that a large part of the iron has to be brought long distances, because the supply of coal for power and of limestone for a flux, and the proximity of great markets for steel furnished by the railroads and large cities, are so favorable.

Geographic Basis of Commerce

Commerce and trade depend on the supply of surplus commodities for exchange, the accessibility of a market, and means of quick and cheap transportation and communication between the region of production and the market. Every place, no matter how small or unimportant, is a trade center, because the people of no region in the civilized world are wholly self-supporting. The great commercial centers are those most favorably situated for quickly exchanging products between different regions, each of which wants something that other regions alone can produce. Chicago, St. Louis, Duluth, San Francisco, New York, and Boston, for instance, have developed where they have and to their present importance because each has certain very favorable geographic conditions for carrying on trade in a large way. In one case it is a fine harbor, in another it is nearness to raw materials or manufacturing centers, or it may be

exceptional facilities for quick and cheap transportation by land or water.

Scenic Resorts

The larger number of people in the world are dependent on the occupations already described, but there are many places where the permanent population depends for its livelihood upon the fact that these localities are resorts to which travelers come in numbers for some special reason. Such resorts have a very definite geographic reason for existence and are centers for a concentrated population because of these conditions.

Seashore resorts like Coney Island or Atlantic City; health resorts like Saratoga Springs, New York, or Hot Springs, Arkansas; regions visited for their scenic features like the Grand Cañon of the Colorado or Niagara Falls; places of historic or religious interest like great battle fields or Mecca, are all regions which may be classed under this inclusive heading.

In the study of all regions it will be necessary to consider the reasons for the density of population or the importance of the section industrially or commercially by making a study of the life conditions of the people. Through such a study of the reasons for industries and occupations, generalizations of permanent value to all geography study may be made.

It is to show teachers what they need to bear in mind, from the standpoint of geography, that this somewhat detailed consideration of the geography of industries has been given. The amount of detail to be introduced in the study must depend largely on local conditions and the object of the work. However studied, the work should lead to such an understanding of the basal geographic conditions as is outlined above.

These principles, thus worked out through the study of the lives of people in different regions, lay a foundation for the work of the upper grades geographically and educationally strong and of permanent as well as immediate value.

Commercial Geography in the Upper Grades

Commercial geography differs from industrial geography in its content and purpose of study. It is a phase of geography teaching that deserves emphasis in the upper grades, as industrial geography is adapted particularly to the intermediate grades. Commercial geography is a large topic, and only its elements can be included in elementary schools as a phase of geography teaching. As a special subject it can be studied with success only with more advanced pupils than those found in elementary schools. A real study of commerce involves a good preparation in the elements of economics as well as in physical and regional geography, and hence is not adapted to the elementary school. Yet commercial geography is so important a part of the necessary training for modern life that the elements of the subject have come to be recognized as the necessary climax to elementary-school geography. Commercial facts have long been a part of school geography, but facts are a minor, and in some ways, the least important portion of the subject. Statistics, except in round numbers that will show relations, are poor food for any youthful pupils, for values change so rapidly that what is learned as true to-day may be outlawed to-morrow.

What the pupil needs to know in reference to commercial geography are, first, the geographic conditions which explain the distribution of products over the world; second, the distribution of the natural markets for these

products; third, how trade is brought about between areas of demand and supply and the methods of transportation involved; fourth, the reasons for the commercial importance of the leading nations; and fifth, a knowledge of the relative rank of the great commercial nations and their relations to the great land and water trade routes of the world.

In the course of the work pupils must learn the location and reasons for importance of the great ports and manufacturing cities of the world, as well as the world distribution of the great commodities that are the basis of industry, such as wheat, cotton, silk, iron, coal, sugar, and textile fibers.

Throughout the work the causal relations should be developed clearly and little should be memorized. The relations between a dense manufacturing population in the United Kingdom, the supply of iron and coal available for manufacturing, and the needs of the country for food and raw materials, are of greater importance as a contribution to knowledge than an acquaintance with the latest statistics of industry in the United Kingdom, not considered from the causal standpoint.

The last summary of the elementary-school geography work should make clear the reasons for the relative commercial standing of the great nations, which will give pupils an ability to take part in the commercial life that surrounds us all and of which, from the world viewpoint, the United States is so important a factor.

These conclusions can only be reached, however, if the regional study of the several continents has been well done in the upper grades. Each country considered should be studied in such a way as to bring out its commercial features as the climax of the causal study of the physical and political geography of each region. In the upper grades

the emphasis in the regional treatment should be on the commercial relations of one region to another, just as in the intermediate grades it should be on the industrial development of each region. The earlier study should be devoted to an interpretation of the local industrial conditions in any locality and the later study to the commercial interrelations of industrial areas. If this method is followed the work will be adjusted to the needs and abilities of pupils at different ages, and the emphasis at each stage of progress will be on phases of geography that make possible the best interrelations with other subjects in the curriculum.

Special Courses in Industrial and Commercial Geography

Thus far attention has been devoted to the problems of teaching industrial and commercial geography in the grades where these phases of geography teaching are emphasized as parts of the normal course in regional geography. In some localities, however, the tendency is developing to have a specialized course in this phase of geography in the upper grammar grades. In such cases the work is not wholly geographic, inasmuch as certain of the industrial processes have to be taken up in association with each topic considered. Hence the work is broader and more complex than can be taken up in a regular course in geography. Further, the point of view is somewhat different. In our usual courses in the intermediate grades we study the great groups of industries, as has been indicated above; in these special courses the plan seems to be to study in some detail the distribution, production, exchange, and usefulness of the many great raw materials that enter into industrial life—the bases for the necessities of life—food, clothing, shelter, and power.

Thus far this work is but partially organized, and teachers will find the available materials scattered and the maps and atlases necessary for good work few. The organization of the field is therefore a difficult theme. Yet the several products that will ordinarily enter into such a course are not many in number and can be readily agreed upon. They include obviously the cereals: wheat, corn, oats, rye, barley, rice; the flesh-producing animals: cattle, hogs, sheep; the chief fruits: apples, bananas, lemons, oranges; the fibers: cotton, hemp, flax, silk, wool, goats' hair; the fuels: oil, gas, coal; the woods for lumber, implements, paper, and gums, as seen in the tropical forests, in the southern, southeastern, northern, north-central and Pacific states; the clays, building stones, building materials, and abrasive materials secured from the earth, together with a few other common products of special origin.

The object in treating each topic is to study its area of natural distribution with the simple reasons therefor—how it is secured through commerce, how and where manufactured, and for what used. The work should be as causal as possible and should involve a comparative study of maps and a certain amount of supplementary reading. Where possible, some points should be given as to the relative standing of the United States in the world production of each product.

It should be borne in mind, however, that the object of the work is not to make a study of the distribution of raw products over the world, but of how our country, and especially our locality, is supplied with the necessities of life. The danger in this kind of work is that pupils will be given facts and will not be made to think and to aim at generalizations. Therefore teachers should insist that the topics be studied in reference to the surface and

climatic conditions of our country, that pupils learn the location of areas of production and manufacture, and that all work be done with the map as a constant reference basis.

Only a hint can be given here as to the scope of this work, for its details are beyond the purposes of a volume devoted to the course of study in geography as an organized field of work. Commercial and industrial work are only in part geography and are as yet in a formative stage. Teachers who know their geography, however, will not be at a loss in outlining work in this new and related field.

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CHAPTER XIV

COLLATERAL READING

The Value of Collateral Reading

TEACHERS of geography in any grade need to realize that effective work can be secured only when all the available sources of helpful material are used and when pupils are led beyond the book and the classroom into the broader fields of literature and nature. In our efforts to make our pupils letter perfect we narrow our field, religiously drilling them on the pages of the text apportioned to our particular grade and hesitating to leave the beaten track for the bypaths where a broader training lies. Collateral reading is one of these bypaths which should be thoroughly explored. The well-read man is the educated man, though his education may have been secured entirely outside of the classroom. It is our duty as teachers to open these paths to the children, even at the expenditure of time that we feel can ill be spared from required topics.

A library is of great assistance in establishing the habit of collateral reading. A small school library is invaluable, and the public library, frequently with attractive accommodations for children, equally helpful. A child is very unlikely to select the kind of reading that the teacher would choose for him unless his interest has been aroused in some way. If an interesting chapter or portion of a chapter be not only recommended but read aloud in the classroom, there is no danger that the book will be uncalled for.

A few carefully selected books bearing upon the work

of the year should be kept in the room, that the pupils may have ready access to them. The pupils should be encouraged to use them before school, occasionally during study periods when a piece of work is finished before the allotted time, or they should be allowed to take them home. A point should be made of requiring some collateral reading in connection with every important topic studied. This is possible to-day to a degree that was unthought of a comparatively few years ago when textbooks were practically the only printed matter available for the instruction of children. In the affections of children, travel and adventure naturally occupy the first place among books that may be classed as geographic in character. These oftentimes give excellent pictures of the regions described, but a careful selection should be made among them, that only the moderately reliable may fall into the children's hands. Many are not geographic in the true sense of the word, for they so completely sacrifice truth of description to the tale itself that nothing whatever is gained from the standpoint of our subject, and much lost in the erroneous conceptions fixed so firmly that they are difficult to eradicate.

Magazines as Collateral Reading

The current magazines and the daily papers are too little used in school work. Articles of much value are to be found in both, but where the field is so large a good deal of time is required to keep in touch with it. Where the magazines are accessible, a committee of pupils might be appointed to acquaint themselves with their contents, that they may bring to the notice of the class any articles of value that bear upon the work. These articles perhaps rank next to the books on travel and adventure as interesting forms of geographical literature. A dull piece of work rarely finds its way into the pages of a magazine. They

are published to entertain as well as to instruct, and if an article fails to satisfy the first requirement it will have no opportunity to fulfill the second. The fine illustrations that are a feature of these articles not only add greatly to their value, but in attracting the attention and in arousing interest, in the first instance, they make an appeal for collateral reading that is not easily resisted.

There are several magazines dealing exclusively with geographical topics that should be in every school. The *National Geographic Magazine*, valuable both for its articles and for its wealth of illustrations, is such a publication. Either feature would entitle it to a place as an important aid in school work, while the combination places it in the foreground of the valuable supplementary materials for teachers and pupils alike. There are other magazines, not of the popular type or yet wholly geographical, that should not be allowed to escape the attention. Foremost among these is *The World's Work*, devoted, as its title indicates, to various lines of activity, among which commercial problems, the development of a great industry, exploration, and kindred subjects all have a place. Probably no magazine will have more of value to contribute to the work of the upper grades than will this one.

Pupils should be encouraged to watch the newspapers for items of interest bearing upon their work. They do not need much urging to bring in such articles, especially if some use be made of them. These might be given to a committee of the pupils, whose duty it should be to pass upon them. Those of value might be mounted upon a bulletin board whenever they would be of particular interest, or perhaps pasted in a blank book kept for that purpose, the committee being responsible for their use at the appropriate time.

Magazine articles, however, merely give us glimpses of

a country. To accumulate a series of such articles covering the leading regions of the world would be a difficult task and when completed would still be unsatisfactory as the main source of reference, for the result would be a collection of interesting fragments, not a picture of the region as a whole. These fragments are illuminating but should be based on a more general view of the country; this the geographical reader gives us.

The Use of Geographical Readers

The reader furnishes the most accessible and the most inclusive form of supplementary work and is therefore in wide circulation. The material is not only at hand without the necessity of searching for it, but the important countries are covered in considerable detail. The books moreover are adapted both to elementary and to advanced classes. These are certainly important considerations, and the reader rightfully has the first place in the list of supplementary material, though its style is ordinarily less interesting than is that of the material to which reference has previously been made. Naturally the object of the reader is primarily to give information, not to tell an interesting tale with information woven in. Neither can it dilate or enlarge on its subject to the extent of the magazine article for, though its space is not limited in the sense that that of the textbook is, it must nevertheless cover a large territory in a comparatively small compass in order to keep pace with the requirements of the work for the term or the year.

While the choice among readers that practically cover the geography course is not very great, a sufficient number, of varying degrees of worth, are on the market to make a careful inspection necessary before making a selection. Truth of impression should be the first requirement, this

to include not only accuracy of statement but a correct interpretation of the personal traits, characteristics, customs, and habits of life of people living in an environment differing from our own. Children should be taught that people are not "queer" because they differ from us, and that their manner of life is largely a result of environment, as is our own. The opposite point of view is frequently taken, perhaps with the idea of impressing the characteristics of the people under consideration, but the end does not justify the means. The next requirement of importance is a good style—well-written English and interesting from the standpoint of the pupils. The mistake of "talking down" to children is often made in the attempt to interest them. A book written in this vein is never a success. The children detect the slight which this involves and resent it.

The reader chosen should supply those details of life and environment that would otherwise be largely lacking. The teacher, by means of map and picture study with his class, can present little more than an outline of a country; the textbook covers much the same ground. When we consider that the textbook must present the important features of all the countries of the world, more cannot be expected of it. Much therefore devolves upon the geographical reader, but its value will be greatest if it does not attempt too much. Certain phases of the work are in need of an especially full treatment. If these dark places are made light, the reader will fulfill its mission. It will be worth much to the teacher in lessening his research for this material that is so much needed, and to the pupils in putting within their grasp much that would otherwise be utterly beyond them. In order really to know a country, to get into the heart of it, one must understand its people. If they are presented from the

standpoint of their own environment, as has been suggested, not from that of ours, the resulting point of view will be the true and the sympathetic one. Such a study of Eskimo life, for instance, will reveal these people not as a tribe little above savages, living upon food never intended for human beings, but as a people who have shown wonderful intelligence in adapting themselves to their environment and a high degree of skill in making use of the few resources at their disposal.

Another respect in which the information given by the text needs supplementing is in regard to the stage of development of distant parts of the world, and distant parts of our own country. Few adults realize the progress that has been made in recent years in the United States. We need to bring out the sidelights on American life as well as the fact that Africa, Australia, and much of Asia are not in complete darkness. Nothing apparently impresses the true state of affairs so forcibly as does the study of the great cities of the various continents. A description of such a center, for instance one in Australia accompanied by illustrations showing its fine buildings, its streets, and its parks, is always a surprise to a class, their exclamations, "Why, that might be in our own country!" showing the benighted state of their minds, though they may have glibly mentioned that particular city as one of the important "centers" of the world. This should not surprise us, for a similar illusion in regard to the backward state of development of some of our own large cities is scarcely dispelled in the minds of many otherwise intelligent foreigners. Travel, the ideal method of studying a country, has largely corrected this impression. Detailed, illustrated descriptions are a good substitute and should be made accessible through the reader.

The Importance of the Picturesque in Geography Teaching

The geographical reader, again with the aid of illustrations, is our main reliance in revealing the picturesque in our study. Space is needed for word pictures, and only by means of a full, graphic description of a region can it be even imperfectly revealed. Bare statements of facts are inadequate here. The statement that the Colorado Cañon is in places over a mile in depth and that the river is inaccessible throughout much of its course, does not reveal its wonders. This side of our subject is too often slighted, principally for the reason that teachers depend too exclusively upon the textbook, where the adequate treatment of such topics is out of the question. To awaken and to cultivate in our pupils an appreciation of the beauty in the world about them will increase their happiness in life and will add to its value perhaps long after our more formal instruction is forgotten.

Certain regions of the world are so distinctive that they, too, must be added to the list of topics requiring a more detailed development than can be offered by the textbook. The desert, the jungle, the steppe, the tundra, are such regions. We may study the desert with our pupils from maps, thus showing them the cause of its aridity; we may teach them the fundamental facts in regard to it so well that they will be able to recite with apparent intelligence on the subject, and still the true picture of the region will be lacking. A good description creates an atmosphere that is needed in visualizing the unfamiliar, and this it is the province of the reader to give us. A detailed account of the desert, of its diversified surface, its bare rocks, its wastes of sand, its wonderful color, its silence unbroken by the moving of a

leaf or the chirp of an insect, its scarcity or absence of vegetation, should leave an impression sufficiently strong to destroy the traditional feeling in regard to it, more barren than the region itself—that it is always a "dry, sandy plain."

Other regions as far removed and as little known are equally in need of graphic descriptions. As in the case of the desert, the names applied to them generally call up no picture except that afforded by some definition that has been memorized. A jungle, for instance, may be known verbally as a tropical region of dense vegetation, but still be an unknown land as far as any real conception of it is concerned. Few topics are in greater need of amplification than are the particularly characteristic industries of a section. The many industries of any locality should not be treated in detail, but where one has been developed in a striking manner, as has the wheat growing of the Middle West or the cotton of the South, or where an industry is especially unique, as is the rubber industry of the Amazon, the ivory of Central Africa, or the diamonds of Kimberley, a full account should be given.

Essentials of a Good Reader Summarized

Thus far, three of the essentials of a good reader have been discussed—its reliability, its style, and its function as a supplement of the textbook. While the remaining are perhaps of lesser importance, they are by no means to be disregarded in making a selection. The reader should be illustrated, the more fully the better so long as the pictures are well chosen. A few carefully selected photographs are better, however, than many where the majority are indifferent or poor. A teacher should be able to rely upon the illustrations as he does upon the printed matter. Every one should serve a definite purpose or

it has no place in the volume. Finally, the book should be pleasing in appearance. Good paper, clear type, well-executed illustrations, and an attractive binding are all elements in furthering the cause of collateral reading.

The Use of Books of Reference

Besides the books already mentioned as available for supplementary work are those that may be classed not as readers but as books of reference. An excellent series has been edited by F. D. and A. J. Herbertson entitled *Descriptive Geography from Original Sources*. Each continent has a volume devoted to it but, unlike the readers, the book is made up of many short selections contributed by a variety of writers. The sources are "original," for each article is furnished by an eyewitness.

Many other books of reference should be drawn upon. This will be found especially necessary in the study of the industrial and commercial phases of our subject. Here conditions change so rapidly that no textbook can pretend to keep abreast of the times in these matters. It is not safe to accept the statements of the textbook or even of the best commercial geographies on this subject, except in the most generalized form. That a country or a state ranks *among* the greatest producers of a certain commodity perhaps need not be verified every year; that it ranks *first* should, however. For these ever-varying statistics government reports should be consulted, as the *Yearbook of the Department of Agriculture*, the *Monthly Summary of Commerce and Finance*, the *Census Reports* and the *Statesman's Year-Book*, which latter is one of our best references in such matters. Except for the latter, these reference volumes may be secured for the asking. Another valuable source of reference is furnished in annual almanacs published by several of the leading newspapers.

How to use Collateral Reading

It is evident that there is no dearth of material that may be drawn upon for purposes of collateral reading, and that it is an essential part of our subject all will admit. It is nevertheless frequently neglected, not through a lack of appreciation of its value, or through ignorance of the availability of the supply, but for the very practical reason that the geography period is too short for both the actual requirements and the quantity of supplementary reading that an understanding of the subject demands. A part of the work must evidently be relegated to some other time of the day. But we must not encroach upon any other subject. The practice of using the geographical readers as literature, and so absorbing the English period, is rightly unpopular with the supervisors of that subject. Neither does the usual method of handling the work in geography, an assignment from the textbook for home work and repetition upon repetition of the same the following day, solve the difficulty, for no time either at home or in school is thus left for supplementary reading. The method previously advocated for the treatment of our subject, the use of the period assigned to geography for the actual teaching of the lesson to the pupils, meets the situation admirably. The lesson taught in school leaves the home assignment open for any reading bearing upon the work of the day. This not only provides time for collateral reading but puts it in its proper place both with reference to the development of the subject and with respect to the relative difficulties of the textbook work and supplementary reading. It should usually follow rather than precede the lesson, that the pupils may go to their reference books for information that they were unable to get through their own efforts in the classroom.

Assignments from the text for home preparation, where the work is not developed by the teacher, generally prove "too hard," and therefore result in loss of time, as that work must be redone in the schoolroom on the following day.

Where supplementary reading or reference work of some kind is given as home work, the assignment will not prove troublesome and the school period will be left free for the really difficult work. Occasions may arise when the teacher will wish to make preparation for the lesson of the following day by assigning some reading in advance. This is legitimate where the reading does not give the pupils information that they should discover for themselves. A child should promptly be asked to report to the class on some topic which the others do not prepare.

Reference work offers a real opportunity for giving as well as getting on the part of the children, of which we should take advantage. There is an additional stimulus in preparing work and in reciting if one is conscious that one's audience is not equally well informed on the topic in question, and that the object of the recitation is not primarily to test one's knowledge or lack of knowledge but to really give information to others. Where the reading is given as home work, care should be taken to ascertain that it has been done to some purpose. An oral summary may be called for the next day, an outline of the important points may be handed in, or a few minutes may be taken from the geography period for a brief written description of some important feature. Occasionally this reading should be done in school under the eye of the teacher, perhaps during a study period, that the children may be taught the best way of mastering such an assignment. A lesson is not well prepared if a child is unable to give an intelligent summary without detailed questions on the

part of the teacher. He should be able to mention the several leading topics which are discussed and the chief points that are made in connection with each. A rough outline of heads and subheads made by him for his own benefit as he reads will soon teach him to sift out the most important points.

There should be one absolute requirement in connection with reading of this character. It should invariably be done with a map beside one, that all features mentioned may be located. The reading will lose half of its value if this provision is not made. Map study in connection with collateral reading not only fixes the location of the places referred to but makes the reading itself much more intelligible.

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CHAPTER XV

THE PREPARATION, ORGANIZATION, AND CONDUCT OF A LESSON

The Worth of a Teacher

THE conception of the function of the teacher has changed completely within the past generation. His duties were formerly twofold—the first and most important to "make the children mind," the second to "hear lessons." If he proved to be a "born disciplinarian" his position was indeed the sinecure that it was generally regarded, for there was no burden of preparation for the next day's work after school hours and no painstaking instruction in the schoolroom. The work of the teacher, to-day, if it is well done, is as exacting and arduous after hours as during the daily session itself, for his appointment carries with it the duty of *teaching*, not of hearing poorly prepared lessons, and in order that he may teach a most careful preparation must be made.

The Necessary Basis of Knowledge

The first step in this preparation is to obtain command of his topic—not of the one lesson that introduces the series but of the whole, of which the first is only a small part. The result will be fragmentary and unsatisfactory if the attempt be made to work out the subject lesson by lesson, as it is needed. It must be seen in its entirety by the teacher, in order that he may gain the grasp necessary for its clear presentation. For instance, if the topic is the climate of India it will not do to study its temperature, the portion of the subject with which he

would naturally begin, and give his lesson on this part of the work and then go on to the winds of India in the same manner and finally to its rainfall. The objection to this method of work is its utter lack of perspective. Certain points in regard to the temperature of India are comparatively unimportant and may be ignored; a knowledge of others is absolutely essential to the succeeding work on winds and rainfall. Only by means of a knowledge of the whole can any portion be well taught.

Therefore before attempting to give any instruction on this subject, climate, including temperature, winds, and rainfall, must be thoroughly mastered. The teacher is then in a position not to give but to prepare his first lesson. No adequate preparation of a topic can be made from any one textbook; two or three of the best should always stand on the teacher's desk for purposes of reference. These should be consulted as well as other books bearing upon the subject. The teacher must read widely if he wishes to teach successfully. He must have a reserve fund of information or he will constantly find himself at a loss in the classroom. If the intellectual curiosity of children is not aroused by a lesson, if they do not care to discuss it or to ask questions, a teacher does not need his supervisor to tell him that his work has been a failure. Too many teachers willfully repress questions on the part of their classes; knowing that they have practically nothing to give their pupils, they take refuge in assigning a lesson from the text which they hear on the following day without countenancing deviation from the beaten track; or they resort to the simple and very effective device of forbidding questions on the ground that if the children are only attentive to their explanation, none will be needed. It is unnecessary to comment on work of this character, which shows so plainly an utter lack of

appreciation of the meaning of education as well as a failure to understand children.

A teacher should be thoroughly informed on the topic which he presents that he may have a fund of knowledge upon which to draw for purposes of illustration. Detailed information is necessary if he would throw such strong sidelights upon the problem under consideration that the children cannot fail to get true impressions. A vital grasp of the subject on the part of the teacher will arouse a life interest on the part of the class. The statement, for instance, that glaciers have wide and deep crevasses is not of great interest to children. They may not have a very clear idea at the time of what a crevasse really is, and in the near future will have no recollection of it whatever. A description of a crevasse actually seen, or known through reading, so wide that it could not be crossed, so deep that on looking into it the beautiful blue of the ice gradually changed to black; an account of the dangers of traveling across glaciers as a result of these crevasses, especially after a snowstorm; and finally the story of the immortal "Stickeen," will insure an absorbing interest in the topic that will make reviews superfluous.

Work of this kind requires time and the professional spirit. The teacher is no more exempt from study than is the doctor or the lawyer. As the doctor's time must be given largely to research and to study, so must that of the successful teacher. There is no royal road to this detailed knowledge that is the very life of the recitation. Summer schools, extension courses, reading circles, and other courses of instruction are all of great aid in arousing enthusiasm, in offering suggestions, and in directing a line of study, but nothing can be substituted for the careful preparation of each topic before it is presented in the classroom. This is not the impossible task that it may

appear to the busy teacher who is not a specialist in any one line but is supposed to fill the rôle in a variety of subjects, for the topic once prepared furnishes material not for one but for many lessons, and the preparation of the lesson is, after this preliminary work, a comparatively simple task.

How to Outline a Series of Lessons

There is an intermediate step between the thorough study of the topic on the part of the teacher, which has been discussed, and the preparation of the lessons themselves. This is the careful outlining of the topic on the basis of class work. All that has been acquired will probably not be wanted; some of it may be too difficult, some not of sufficient importance. Only those portions of the topic that are to be presented to the class should be included. An outline of this kind not only systematizes the work, insuring a logical presentation, but its close sequence will also serve to recall the subject when it would otherwise be forgotten.

The following outline is given as suggestive of work of this character:

Climate of India

Temperature for January:

Land and adjacent water masses compared; differences accounted for.

Highest: Temperature stated; area located.

Lowest: Temperature stated; area located.

Position of heat equator; reason for location.

Temperature for July:

Land and adjacent water bodies compared; differences accounted for.

Highest: Temperature stated; area located.

Comparison with January conditions; reasons for differences.
Lowest: Temperature given; area located.
Comparison and reasons as above.
Position of heat equator.
Comparison and reasons as above.
Winds:
January: Direction, cause.
July: Direction, cause.
Definition of "monsoons."
Rainfall:
Distribution: Heaviest; location of area; amount; cause.
Least: Location; amount; cause.

The Preparation of a Lesson

The next step in the teacher's work is the preparation of the lesson. The material that he wishes to present must be again arranged and organized, but this time in a form adapted to the comprehension of the children. In other words, a lesson plan of some kind should be drawn up. Scientific investigation of any description involves first of all a clearly conceived problem which is to be solved. The first step in such an investigation is a careful review of the work already done along the same line, that one may be sure that no point necessary to further progress has been overlooked and that the line between the known and the unknown may be clearly defined. The next step is the collection of data bearing upon the problem; the third, the conclusion or inference to which these facts inevitably point; and the fourth, the testing of the inference.

A geography lesson, too, should be an investigation for the pupils, and if so conducted falls naturally into the

same divisions: first, the review or the preparation for the new work; second, the collection of data bearing upon the problem which is to be solved; third, the inference or the statement of the solution of the problem; and finally, its testing or application. The teacher's plan may be of the simplest as long as it recognizes these main parts of the lesson. A few questions for the guidance of the work should be noted under each division. These are not supposed to cover the topic completely. The class work itself, the questions of the children, their perplexity or their insight, must be an important factor in the detail of the lesson. Though the plan need not be elaborated, its importance must not be underestimated, for a thorough knowledge of the subject on the part of the teacher will be of little avail if the laws governing the recitation are disregarded.

The problem, as has been said in a preceding chapter, at once makes the topic under consideration worth studying, for something tangible is seen as the goal—not some far-off good, as the getting of an education, which does not appeal to the ordinary child. Neither does the usual method of introducing a topic, as, "To-day we shall study Egypt," prove interesting, nor does it offer any definite line of work to the children. A problem should have both of these qualifications—it should attract the pupils and make them feel at once that something is expected of them.

The greatest benefit, however, to be derived from this method of studying a topic is the unity which results from it. A problem acts as a check upon the teacher who attempts to cover altogether too wide a field in one lesson, and upon the pupil who wants to tell an interesting adventure or story suggested by some fact in the lesson, but not pertinent to it. It also gives a perspective that every lesson should have and that is too often lacking.

According to this method the lesson naturally falls into points of varying degrees of importance. The problem around which the work revolves occupies the place of first importance; the inferences arrived at as its possible solution occupy the second place, while the details on which the various conclusions have been based fall into their proper position as of minor importance.

The Importance of the Various Parts of the Lesson

The review or preparation which follows the statement of the problem is an important part of any lesson. Its object, on the part of the teacher, is mainly to ascertain whether the pupils have a foundation on which it is safe to build, and if they have not, to lay one. Where this step is omitted the teacher frequently finds himself unable to make headway with the work. The children do not understand, are uninterested, and little or nothing is accomplished.

The second stage of the lesson, the collection of data under the guidance of the teacher, or the presentation of the new material, as it is usually called, occupies the greater part of the period. In connection with this work comparisons with topics previously studied should constantly be made, in order to bring out resemblances and differences, that light may be thrown on the subject under consideration from every possible quarter.

After the collection of sufficient data the pupils should be asked for the conclusion toward which their evidence points or for a tentative answer to the problem which their work is supposed to solve. The work is not complete without a testing of the inferences which they have reached. This may often form the last step in the lesson for the day, or a succeeding lesson may verify or overthrow

the conclusion which has been deduced. For example, the careful study of the distribution of temperature in North America may lead to the conclusion that coasts are more equable than interiors; that in the westerly wind belt the eastern coast has a greater temperature range than the western. These inferences should be verified by a study of the temperature distribution in other continents similarly situated, before they are accepted as final.

The duty of the teacher is not primarily to assign lessons to be prepared at home and to hear them in school, years of this practice to the contrary notwithstanding. His duty is to *teach* during the periods assigned to the various subjects. Instead of giving children a lesson to learn at home, the teacher should generally use the geography period to teach that lesson to them, giving as home work some additional reading or some other exercise suggested by the work in school. Or if a home assignment is made from the textbook this should be used as a foundation on which to build during the period devoted to the subject in school. The period should still be used for teaching, not simply for a repetition of the home work. An enormous amount of time might be saved in the eight or nine years of the grammar-school course if the hours of the school day were used to the best advantage.

The Presentation of a Lesson

Suggestions have already been made in previous chapters in regard to the best method of handling the work of various stages, but the question is of sufficient importance to be treated in considerable detail, even though this involves some repetition. While there are many ways of presenting lessons, and while the details of the method must depend upon the stage of the work and upon the

particular topic which is under consideration, there are certain fundamentals which must not be disregarded if our work is to educate.

In the first place, children should not have done for them what they can do themselves. This is the chief argument against basing the lesson solely upon the text, for there the pupils find data and inferences ready-made for them. They are spared the exertion of gathering details and of drawing their own conclusions. This is a shorthand method of getting information, for the collection of data consumes much time, but even from this point of view it is doubtful whether there is much or any gain for, in the one case, information so obtained is forgotten almost as soon as it is learned, unless it is kept in mind by constant reviews, while in the other the effort expended in reaching the conclusion does much to fix it in mind, making frequent repetition unnecessary.

The method peculiarly adapted to the study of geography is the method of personal investigation. This is not an innovation, as far as college and secondary-school work is concerned, for in our higher schools field and laboratory work are not only a recognized part of the course, but in the case of the high school laboratory work is actually required in connection with the geography course. A method that is so successful in the secondary school may have some virtue for the elementary as well. The laboratory method is the recognized method of teaching biology and physical science in the elementary school, where they occur. There seems to be no good reason for discriminating against geography, especially as the fact has been established by our best schools that this method meets with unqualified success.

The laboratory method in geography in the elementary school is the map method of teaching this subject, the term

including the study of all of the various illustrative materials that can be brought together. By this method is meant not the slavish adherence to the map that has too long characterized the use of the text, but the basing of the work on the map and other illustrative material rather than on the text. In the classroom the custom has been for the children to sit with closed books while they were questioned by the teacher on the statements of the text. Instead of this, every book should be open during the lesson, while the children, under the direction of the teacher, search their maps and study photographs in order to solve whatever problem is before them. For instance, if a lesson in one of the upper grades were given on the Sahara, with the problem, "Let us see if we can find out why the caravan trade across the Sahara is carried on in spite of its difficulties and dangers," every bit of information that maps and photographs had to offer on the question should be sought. This would form the skeleton of the lesson which the text, class discussion, and reference reading would fill out. Preparation for the work should be made by ascertaining that the children know exactly what is meant by a caravan, what its equipment involves, and what load each camel is able to carry.

In order to answer the question suggested, what the dangers really are must be known, on the one hand, and what the benefits are that result from the trade, on the other. In order to appreciate the dangers one must have, in the first place, some idea of the vastness of the region. This the scale of the map readily supplies. If the Sahara be compared with the size of some region with which the pupils are familiar, as their own country, the figures will have a meaning which they would otherwise lack.

The surface should then be studied from a physical map, in order to learn whether this feature should or

should not have a place among the difficulties which attend such a trip. Climate must be known; therefore temperature should be studied from isothermal maps, rainfall from maps showing its distribution, and, in connection with rainfall, wind maps should be examined, that the reason for the scanty supply of moisture and the consequent danger of dying of thirst may be understood. Questions and photographs will bring out the lack of vegetation in an arid region, the quantities of sand, and therefore the possibility of occurrence of sand storms.

The map, aided by the photograph, thus shows most of the dangers which must be encountered — the great size of the desert, which involves a trip many weeks in duration, the sandy waste with few landmarks and therefore the possibility of losing one's way, the lack of water which carries with it the danger of dying of thirst, and the drifting sand which makes the sand storm of frequent occurrence. Other dangers, as the possibility of robbery by the wandering tribes, cannot be read from the map, but are naturally inferred in a region where the conditions of life are so hard that people are led to prey upon one another in their struggle for existence. While many of the questions have thus been answered, text and reference reading are needed to supply detail and to make more vivid the various pictures which are called up. For instance, when the lack of vegetation and the drifting sand are mentioned, a description of a sand storm should be read or given by some pupil, and when the scarcity of rainfall is noted, in order to impress the value of water in a desert, an account of the extremity to which travelers who lose their way are often brought, should be given. The lesson should constantly be illuminated in this way, that an approach to a realization of conditions may be made.

Before the question which is before the class can be

answered, the products carried by the caravan and their value, as well as their commercial importance, must be known. If central Africa has already been studied, the products entering into this trade would naturally be inferred. If not, the textbook should be consulted for this point, and reference tables for information in regard to the commercial value of the articles carried.

After summarizing the various points which have been collected, the difficulties on the one side and the value of the trade in the world's commerce on the other, opinions on the question may be called for, or the inference may be drawn. The conclusion may be tested by comparisons of the relative values and the accessibility of the commodities carried by the caravans with similar products procured from other parts of the world.

This method of conducting a recitation makes necessary careful preparation for the period, but the gain on the part of the children in independence of thought, in initiative, in interest, and in knowledge of the subject is so great that every earnest teacher will feel that it is well worth the effort.

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CHAPTER XVI

THE PREPARATION OF A TEACHER OF ELEMENTARY-SCHOOL GEOGRAPHY

The Necessary Training of a Teacher

FEW teachers in elementary schools can be expected to be specialists in the field of geography. Indeed, it is not desirable that they should be, for if all teachers had the same hobby, other subjects in the curriculum would be neglected and children would suffer in consequence from having one side of their work unduly emphasized.

It is desirable, however, that every teacher in elementary schools should have some one subject in which he is particularly interested and in which he is so at home that he can teach it as a master. Those who choose geography as their special field of study offer no problems to those primarily interested in the training of teachers for elementary schools, for they will go beyond the high schools and will secure help, inspiration, and guidance from the leaders in geography in our normal schools and other higher educational institutions. They will become specialists, and need only to be warned not to carry back unchanged to the schools the methods of study and exposition they have learned while themselves students. With their fuller mastery of the field it will be their task to adapt their larger learning to the problems of elementary-school geography teaching and to assist their less fortunate fellows (from the standpoint of geography) in improving the quality of the geography work in schools.

The larger body of elementary-school teachers will secure their training for geography work, as a part of their

general training for teaching, in our normal and training schools. They will there secure the necessary minimum amount of training in geography that will enable them to understand the problems of geography teaching and readily to organize and use the materials outlined by the higher authorities in geography.

That training should consist largely of a study of geography, for the first requisite of a teacher of any subject is that he know the subject, or at least be sufficiently at home in the subject that he cannot be led astray by any active-minded or ingenious pupil who sees his weakness and profits thereby. The content and amount of geography that teachers in training must acquire as a minimum is indicated by the character of the course of study as generally followed in the country. This work readily resolves itself into two divisions, so far as the pupil-teacher is concerned—a knowledge of the principles of physical and life geography, including commercial geography, and a special study of certain of the continents of the world.

The method of applying either of these divisions in classroom practice is a problem for later study, when the question of the teaching of geography is the point of view from which the field is approached. The method of study in either field should be the adult method of following the causal order from causes to consequences. The work for pupil-teachers should be as accurate, as scientific, and as thorough, so far as it goes, as that given to students who are preparing to become professional geographers. The differences between a course for teachers in training and for the specialist should largely be matters of emphasis and of quantity. No teacher in training can expect to cover the whole field. He must be taught, however, how to work scientifically, how to use maps, atlases, books of

reference, and texts, how to relate the various phases of the work causally, and how to be independent, if not original, in his studies. The emphasis should mainly be laid on those phases of the field that he will have to use in school work, though of course any part of the work must be taken up more deeply than will ever be possible in the schoolroom.

In physical and life geography attention should be given to those phases of the subject that the teacher will have to use, and no attempt should be made to organize the whole field of physical geography, for instance, as would be called for in the case of classes of special students in the subject. Each topic should be considered in sufficient detail in classroom, laboratory, and, if possible, in the field, so that the pupil-teachers will see the unity of the science and will be prepared to gain profit from the available semi-technical literature on which they may be expected to draw for help in the years to come. In the same way, in the study of regional geography, it is usually best to devote the time to the somewhat careful study of one continent rather than to a cursory glance at several continents. Teachers who have learned how to study North America and the United States so as to get an understanding of the larger facts of the geography of these regions will gain thereby a power that will enable them readily to study any other continent for themselves. In this work, as in the work in elementary schools, power is greater than knowledge, for knowledge may leave one in a self-satisfied, static condition of mind, surfeited with details, while power gives one the ability and the eagerness to go on and test one's strength in the solving of new problems. During the progress of work the teacher in charge should constantly bear in mind the future needs of his pupils and should, therefore, choose his topics and

his illustrations from the practical standpoint. A great deal that is of value from the standpoint of methods of teaching can readily be introduced into a course in geography if the teacher is alive to his opportunities. His own method of presentation, his language in the classroom, his illustrations that bring out illuminating sidelights, particularly on the human side of the subject, should all be models of value to the students as illustrations of how to present the subject to children in a way to arouse and maintain their interest.

Teachers who can go beyond this minimum of study of geography, and who have the natural liking for the subject that spurs them to greater and continued efforts, will find opportunities for advanced study in many of our normal schools, colleges, and universities. Teachers are flocking to our better summer schools in large numbers, and there for six weeks revel in their hobbies untrammeled by the thought of classroom work on the morrow. Much of the recent improvement in geography teaching in elementary schools is due to the influence of summer schools and to the increased and improved opportunities for the study of geography that are now available to all who will attend, though it be at some sacrifice.

Teachers who have made something of a specialty of the study of geography will find a field for usefulness in any locality in being able to help their fellow-teachers perfect their knowledge of the subject and become more expert as teachers. Such teachers will find also, in almost any region, opportunities for original geographic work of the most inviting kind. Practically every locality in this country has yet to be studied geographically, for few areas have been worked out in any great detail. The geography of the home locality ought to be a fascinating field of study in almost any place, for every city, town, or

hamlet in the country is the center of a complex geographic problem that gives full opportunity to test one's power of observation and study. Teachers who will work out the geography of their home regions in a simple and yet adequate way will contribute much of great value to those who have to present the subject of Home Geography to pupils. As has been noted in a previous chapter, the course in Home Geography should be individual for each locality, and who is better qualified for working out such a course than the teacher who has made the locality a special study and who knows its social, physical, and life conditions from first-hand observation and study? The specialist in geography ought to be a leader among his fellows, a source of inspiration to others, and of comfort and strength to his superintendent and supervisor.

Following closely on the study of the essential phases of geography, and based upon it, should be a study of the teaching of geography. Geography teaching, to be successful, must in most cases be based on more than a knowledge of geography as a subject. In fact, the person who is the best trained as a geographer may be a very poor teacher, especially for beginning pupils. A good teacher must know the essential principles of good teaching as outlined in current educational procedure. To begin to teach without having studied any of the principles of teaching is to practice on poor, unfortunate children and to make many serious mistakes such as thousands have made before, and not to take advantage of the experiences of the past. A knowledge of the essential principles of teaching and of general method, so called, is a necessary basis for all teachers except the rare individual who, from personality or natural insight, succeeds without any obvious effort.

Courses on the teaching of geography ought, therefore,

to follow courses in geography and in the general principles of good teaching. Such courses in geography teaching should involve much study of subject matter in geography and give training in the organization of topics from the standpoint of classroom use. A course in geography for teachers should never be free from the teacher's point of view, and a course on the teaching of geography should always be based on, and make use of, the subject as such. The two phases of the work from the standpoint of the teacher cannot and should not be divorced. Each is necessary to the other and neither can exist alone. On the other hand, it is doubtful whether pupils can be adequately trained if the subject material and the methods of teaching are given in one conglomerate course. The proper perspective of each phase of the work cannot be secured unless that phase is studied for its unity from its own individual point of view.

Courses in the teaching of geography will, however, vary in detail with the locality and the point of view of the person in charge of the work. Their content everywhere should be determined by the field of work of the prospective teacher. Teachers in the grade schools must spend most of the time in geography on the teaching of regional geography, the all-round geography of countries and continents. Any courses in a training or normal school in geography or geography teaching must, therefore, have as a goal the perfecting of the pupils so that they can do good work in regional geography. The order of procedure outlined above is particularly well developed for producing such results, but many normal schools do not grant sufficient time in the schedule for such ordered work.

Where only one year can be given to the subject of geography and its teaching, abridgment is necessary somewhere. Under such conditions it would probably

be best to make a careful causal study of Europe or North America, followed by a brief consideration of the essentials of geography teaching. The larger part of the time that can be allotted to training in geography and geography teaching should be given to the study of subject matter, always, however, with the needs of the pupils guiding the teacher in his work. The study of the special problems of geography teaching by those who have had no training in geography since perhaps the seventh grade in the grammar school is about as much a waste of time, and certainly is as foolish, as trying to balance a pyramid on its apex.

Selected Reference List for Teachers

General

Andree's Hand Atlas. Velhagen & Klasing, Leipzig. Recent reference atlas containing excellent climatic maps and maps showing distribution of peoples, religions, plants, animals, etc.

Herbertson, *Senior Geography.* A very useful volume summarizing geography of several continents in a causal order. Especially helpful for Europe.

Lippincott's Gazetteer. A recent authoritative volume containing excellent brief descriptions of all places of any importance.

Longmans's Gazetteer of the World. Longmans, Green and Co. The authoritative pronouncing and spelling gazetteer of the world. Contains excellent brief descriptions of all important places.

Mill, *Guide to Geographical Books and Appliances.* George Philip & Son, London. A very helpful reference list with brief comments on the individual references. Especially strong on European geography.

Mill, *International Geography*. D. Appleton & Company. The best single-volume reference book on general and regional geography.

Regional Geographies. D. Appleton & Company. Accurate, readable, helpful volumes of first importance. Include volumes on Britain and the British Seas, Central Europe, India, The Nearer East, and North America.

Scobel, *Geographische Handbuch*. Velhagen & Klasing, Leipzig. A splendid two-volume reference work on physical and commercial geography and the several continents.

Stanford's Compendia (Reissue). Edward Stanford. The leading reference books on the several continents. Two volumes each on Asia, Australia, North America, Central and South America, Africa, and Europe.

Stieler's Hand Atlas of Modern Geography. Justus Perthes, Gotha. The leading reference atlas.

THE TEACHING OF GEOGRAPHY

Archer, Lewis and Chapman, *The Teaching of Geography in Elementary Schools*. Adam and Charles Black, London. A British book full of detailed and general suggestions of great value.

Geikie, *The Teaching of Geography*. The Macmillan Company. A very suggestive book on the essentials of good geography teaching.

Lyde, *The Teaching of Geography*. Blackie and Son, London.

McMurry, C. A., *Special Method in Geography*. The Macmillan Company. Discusses the scope of geography and outlines a course emphasizing teaching by types.

Redway, *New Basis of Geography*. The Macmillan Company. Interesting and helpful for teachers in upper

grades who need to teach continents from the practical standpoint.

Sutherland, *The Teaching of Geography*. Scott, Foresman and Company. A recent book full of suggestions. Especially strong on the presentation of necessary elements of physical geography.

PHYSICAL GEOGRAPHY

Bowman, *Forest Physiography*. John Wiley & Sons. Deals with geographic conditions determining the development of forests. Gives an excellent summary of physiography of the United States.

Davis, *Elementary Meteorology*. Ginn and Company. The leading English book on weather and climate.

Davis, *Physical Geography*. Ginn and Company. An authoritative secondary school text, particularly helpful in reference to the land features.

Dodge, *Reader in Physical Geography for Beginners*. Longmans, Green and Co. Small volume on physical geography, available as an introduction to the subject.

Dryer, *High School Geography*. American Book Company. A book on new lines, including physical, commercial, and regional geography.

Gilbert and Brigham, *Introduction to Physical Geography*. D. Appleton & Company. An authoritative and well illustrated secondary text on physical geography.

Gregory, Keller and Bishop. *Physical and Commercial Geography*. Ginn and Company. A book dealing with man and his environment. Most suggestive. Less formal than most geographies with similar titles.

Harrington, Mark W., *About the Weather*. D. Appleton & Company. Very helpful for teachers in elementary grades.

Mill, *The Realm of Nature*. Charles Scribner's Sons. A very valuable and simple book on physical and mathematical geography and on biogeography.

Salisbury, *Physiography*. Henry Holt and Company. Most inclusive and best illustrated volume available. An indispensable library reference volume.

Salisbury, Barrows and Tower, *Elements of Geography*. Henry Holt and Company. A clear, forceful, and appealing treatment of physical geography, with a constant emphasis of illuminating human responses.

Tarr, *New Physical Geography*. The Macmillam Company. One of the newest and best high-school books.

BIOGEOGRAPHY

Guyot, *Earth and Man*. Charles Scribner's Sons. One of the older books, and hence not written from a modern standpoint; but still invaluable for presenting the relation of earth features to life.

Herbertson, *Man and His Work*. Adam and Charles Black. A very usable and interesting small volume, showing the manner of life of people living in different regions and amid different surface conditions.

Kirchhoff, *Man and the Earth*. E. P. Dutton and Company. A readable book of the cultural type.

Lyde, *Man in Many Lands*. The Macmillan Company. An excellent reading book dealing with man and his environment.

Lydekker, Hutchinson, and Gregory, *The Living Races of Mankind*. Hutchinson and Company. Two splendidly illustrated volumes on the races of men; simple, and popularly written.

Ratzel, *History of Mankind* (3 vols.). The Macmillan Company. A comprehensive book on the races of mankind, the first volume being particularly

valuable for its consideration of the problems of race distribution.

Semple, *Influences of Geographic Environment.* Henry Holt and Company. The leading book in the English language dealing with anthropogeography.

Wallace, *Island Life.* The Macmillan Company. Classic book on animal distribution from the geographic standpoint.

COMMERCIAL GEOGRAPHY

Adams, *Commercial Geography.* D. Appleton & Company. An accurate and well ordered book on commercial geography. Maps and diagrams are very numerous and helpful for the teacher. Full of facts.

Brigham, *Commercial Geography.* Ginn and Company. A well planned, readable, and accurate volume which presents the principles of the subject with special clearness.

Chisholm, *Handbook of Commercial Geography.* Longmans, Green and Co. The most inclusive volume in the English language. Contains excellent abstracts of general geography of each country in a good causal order.

Robinson, *Commercial Geography.* Rand McNally & Company. Especially emphasizes the economic side of commercial geography, in an unusually interesting style for high-school pupils. Maps and diagrams especially helpful. Deals with general relations rather than statistics.

PERIODICALS

Bulletin of the American Geographical Society. New York City. A monthly magazine including articles, valuable notes on geographic literature, and an excellent

bibliography. A valuable source for all who would keep up to date with world geography.

Geographical Journal. London. Leading strictly geographical journal in English-speaking world.

Geographical Teacher. Phillips, London. Similar in scope to *Journal of Geography* and contains much of value to American teachers.

Journal of Geography. Published at University of Wisconsin, Madison, Wis. Only journal in the country devoted to the teaching of geography.

National Geographic Magazine. Washington, D. C. Leading popular journal of geography in country.

References

Redway, J. W., *The New Basis of Geography*, Chapter XII; Sutherland, W. J., *The Teaching of Geography*, Chapter IX; Davis, W. M., "The Teaching of Geography," *Geographical Essays*, pp. 87–104, "The Extension of Physical Geography in Elementary Teaching," *Geographical Essays*, pp. 105–114, and "Geography in Grammar and Primary Schools," *Geographical Essays*, pp. 115–128.

CHAPTER XVII

THE USE OF EQUIPMENT; MUSEUMS

The Tools of a Geography Teacher

WHILE a large equipment is not necessary in teaching geography, a few pieces of apparatus are essential to good work and should be at the disposal of every teacher of this subject.

Wall maps, globes, and outline maps are essential materials in all geography teaching and they are as necessary as a textbook or a course of study, for no teacher can do himself or the cause adequate justice unless he is furnished with these fundamental tools. These do not, however, include all the available or desirable materials that may readily be secured for school purposes and the use of which will often turn cut-and-dried irrational work into illuminating training for life. Good local maps and guides are becoming so numerous and cheap, simple pieces of apparatus are so easily available at small cost or at the expense of a little ingenuity, that all teachers should know the latent possibilities.

Wall Maps and Globes

Not all the map study should be from small text maps. A twelve-inch political globe should be in constant use in the schoolroom. Globes are generally used in the teaching of the world as a whole, and again perhaps when the subject of latitude and longitude is reached. They are needed, however, throughout the entire course, in the study of continents as well as in the work referred to above. A twelve-inch globe is more useful than a larger one, as it

can be easily handled by both teacher and pupils and will therefore be more generally used than will a more elaborate globe. The opinion is widespread among teachers that a globe is a luxury. It is, on the contrary, a necessity from the standpoint of instruction, and from that of expense it is not an indulgence, for a good globe may be secured for little more than the price of a map. Globes should be constantly used in the earlier grades, and should be used in preference to maps and as an introduction to maps. The first studies of the continents should be based, if possible, on individual small globes in the pupils' hands. Thus the children first get relative size and position of continents and countries from the globe and avoid many of the errors due to being introduced to a Mercator map too early in their work.

These individual globes are helpful in many lessons. They are especially needed in the work on the world as a whole, and again later in the course when topics that have to do with the earth as a globe, or with mathematical geography, are taught. Latitude and longitude, parallels and meridians, lose half their terrors when studied from globes in the hands of the pupils.

A blackboard globe is also a more than useful adjunct in the upper grades. Problems arising from the study of the rotation of winds, ocean currents, and heat belts can be presented best by means of a blackboard globe. One not over twelve inches in diameter will be found most useful. Such a globe is much more efficient in teaching topics like those indicated above than is any political globe with its complicated features.

Good wall maps are equally necessary in every schoolroom. They are valuable for two purposes—as a basis for the study of general features of a country, continent, or world, and as a means of testing a pupil's knowledge of

what he has learned from the text and from the maps in his geography. Wall maps, except those especially prepared for library use, are not for study of details and should not be so used in a classroom. The advantage in using a wall map is that all the members of a class can be required to fix their attention on one thing and one thing only.

School wall maps are for class use and therefore must be equally clear to the pupils in the front row and the pupils in the back row of seats. They must first of all be legible. This means oftentimes that they are too generalized for detailed personal study at close range. A river, for instance, may seem out of all proportion when viewed near at hand, but from the back of the classroom it sinks into its relative place.

The prime requisite of a wall map being legibility, it must not be overcrowded with details and it must be properly colored. Contrasts between different physical regions or political areas should be easily discernible, but this does not mean that colors should be glaring. The colors should so harmonize that no part seems to protrude from the map, but that all appear in the same plane and are yet easily distinguished. Many of our school wall maps fail to meet the requirement of legibility or even of accuracy that best usage demands. All maps should be as accurate in details and as little generalized as the scale will permit. An ordinary sized wall map of Europe, for instance, cannot show all the sinuosities of the shore line or all the crooks in the streams, but all should be shown that are of a size to be represented on the scale adopted for the map in question. A curve in the coast line represented on a map should mean a curve in nature and not be merely a device for showing a general irregularity of the coast with no relation to the actual shore features.

The Minimum Wall-map Equipment

Wall maps of the best type are absolutely necessary in every schoolroom, not merely for their use in the geography work but in all subjects dealing with the distribution of phenomena over the world.

It is a well-known but extremely unfortunate fact that a great majority of the public schools in this country are poorly equipped with the necessary maps for classroom use. In many cases maps are absolutely lacking; in other cases there may be one set of maps for a school building, or perhaps each classroom may have a few, many of them old, worn out, and out of date. To equip all the schools of a large city adequately with maps is extremely expensive, but, on the other hand, they are a long-term investment and the cost per year for a complete equipment would be small.

For the best work in geography, history, and literature every classroom above the third grade should have a Mercator map of the world, a series of political maps, one for each continent, and physical maps of the United States and Europe. The world map should show the ocean currents and the International Date Line as well as political features. It would be well, also, if it showed ocean sailing routes and cable lines.

If this is impossible any classroom ought to have as a minimum equipment a Mercator map of the world, a political map of the United States, and maps of the continents to be studied in that grade. Less than this is more than inadequate—it is a shameful neglect of necessities. These maps should be the permanent property of the classroom and should not be allowed to go from the room.

The minimum is not expensive and should be possible

in any large city. Teachers should make it clear to "the powers that be" that maps are absolutely indispensable, not only in geography but in teaching history, literature, and current events. Much of the objection to buying maps is due to the fact that superintendents and purchasing agents think the necessary expenditure is large for one subject. If it can be shown that maps are necessary in many subjects less objection will be made.

A series of maps available and used every day in the year will cost no more than a piece of striking apparatus to be used in one topic only for a brief period annually. Money will often be readily given to purchase apparatus to be kept in a case most of the time. Why should this money not be invested in apparatus to be used every day? Why should not teachers have maps and globes instead? Any teacher ought to be able to make his demands so forcible, from the standpoint of relative utility, as to be able to persuade a superintendent or school committee to buy maps rather than new pieces of apparatus that have not yet proved their general usefulness.

Government Maps

First and foremost should be mentioned the several series of maps published by the United States government which are valuable for the more advanced work. The large-scale topographic maps of the United States are issued in sections, generally fifteen geographic minutes long and wide, and admirably show relief, drainage, and the distribution of life, or "culture features" as they are called. Both wagon roads and railroads, cities,—not only as to location but in regard to the arrangement of streets, as well,—scattered country houses, and miscellaneous features for which man is responsible, such as lighthouses, are all clearly shown. Relief is represented

by means of contour lines, the contour interval depending upon the amount of slope and varying from five to two hundred fifty feet in different parts of the country. These maps will be found very helpful, especially in the study of the important cities of the United States. They show details of location and environment so well that a selected group, those showing the great cities at least, should be found in every school. These maps are so inexpensive that no one need be deprived of them.

The pilot charts of the North Atlantic and North Pacific oceans are also interesting for upper-grade pupils. They show the principal steamer routes across the oceans, the prevailing winds, the paths of storms, and the safeguards of navigation such as the location of lighthouses, buoys, and floating buoys. These maps are of special interest in connection with the study of commerce and transportation.

Large-scale Outline Maps

A word must be said for the large wall outline maps of the world and the several continents. These may be procured for a small sum, readily take ink, crayon, or water color, and are sufficiently large to be seen across the room. In teaching certain topics one frequently is in need of a map that cannot be procured, or perhaps those on the market may not answer the purpose exactly. In such cases it is a very simple matter for the teacher to fill in one of these outline maps with the required data, thus at small expense adding a valuable piece of permanent equipment. Perhaps isothermal lines for January and for July, drawn at ten-degree intervals, may be needed, or a teacher may wish to present the heat belts, not as they are ordinarily represented but with their boundaries in accordance with the latest meteorological atlas. Outline

maps are also invaluable as a basis for enlarging small maps from books of reference or texts so as to be available for class use. This is particularly true in the case of economic and commercial maps not generally sold in this form. There are many uses for these maps, and only by resorting to them can equipment be at all satisfactory or complete.

The United States Geological Survey publishes a three-sheet contoured wall map of the country that is also exceedingly helpful and that may be used in much the same manner. The physical divisions, as the Coastal Plain, the Piedmont Belt, and the Appalachian Highlands, may be shown on one map; drainage lines may be brought out on another, or any other features that a teacher may wish to emphasize in the study of the country.

Attention should also be called to the Land Office maps of the United States. Each map includes the general physical and political features, and the distribution of forest reserves, Indian Reservations, and similar matters.

Apparatus for Mathematical Geography

The most intrinsically difficult portion of our subject is that of the earth as a globe, or mathematical geography, and of the various topics that fall under this department none are more puzzling than is the revolution of the earth and its consequences. It is no easy task to make this topic comprehensible to our pupils, and any help in this direction is eagerly welcomed. The best appliance on the market for this portion of our work is a planetarium, or season apparatus of some description. This shows the rotating earth traveling in its orbit about the sun. It shows the northward and southward migration of the vertical rays of the sun and therefore the reason for the position of the tropics. It shows the shifting of the circle

of illumination beyond the north and the south poles corresponding in amount to the shifting northward and southward of the vertical rays. The position of the circle of illumination with reference to the parallels makes it possible actually to see the reason for the varying length of day and night over the globe—for the twelve-hour day and night at the equator, for the long twenty-four-hour day or night at the polar circles, and for the six-month period of light and darkness at the poles.

An apparatus of this kind is the best device, also, for showing the reason for the change of seasons, the northern and the southern hemispheres turning alternately toward and away from the sun. This appliance, when really satisfactory, is expensive, and for this reason a teacher must frequently resort to some substitute. A lighted candle and a globe carried about it at an approximately correct inclination, will help in clearing up many difficulties. The circle of illumination may be represented by a tightly fitting paper cap covering half of the globe, a simple device which may be made in a few moments. This may be shifted beyond the north and the south poles in turn, thus showing graphically the distribution of light at different seasons and the varying length of day and night.

The shadow stick deserves a place in a discussion of equipment, though anything less complex can scarcely be imagined. It consists simply of a peg driven into a board in an upright position, its purpose being to indicate the length and direction of shadows in order that local noon may be found, that true north may be determined, and that the sun may be seen to be at a given angular distance from the meridian at a given hour every day in the year, no matter where it rises or how high or low it is in the sky.

Illustrations

One of the most important pieces of equipment is the photograph in all of its various manifestations, from the stereopticon to the picture postal. A lantern is such a valuable piece of equipment for any school that it should be procured if possible. It teaches geography in a most fascinating manner and may become an instrument of education, not in the school alone but for the neighborhood. There is an almost unlimited choice in slides for the illustration of geographical topics. The field has been so thoroughly canvassed that the teacher need do no searching for material—it remains for him only to make his selection.

The stereoscope, which has been revived and improved during recent years, reveals nature more truly than does any other form of photograph, perspective and relief coming out with startling effect. It justifies the claim made for it by the school supply houses that carry it—that it is the next best thing to an actual eye inspection.

Stereographs may be obtained in sets illustrating various geographic topics. Special sets are available to illustrate industries, physical features, and home life and customs in all the continents of the world. There is more or less difficulty in using the stereograph for general class work, as the photographs must of course be used in connection with the stereoscope. For work of this kind each pupil should not only be provided with the instrument, but with duplicate photographs as well. A more usual method of using this material is that of keeping a selected series of the photographs bearing upon the lesson, with two or three stereoscopes, in a convenient spot for the children's use, that they may have access to them during their free moments. A book of directions and

suggestions for the use of this valuable illustrative material may be obtained of the companies handling it, but any method that a teacher finds himself able to follow will repay him many times over.

A teacher may have a good line of pictures to illustrate his work, with the expenditure of very little money. He should have illustrations of all sizes, some so large that they may be seen from all parts of the room, others that may be passed around for individual study. Many of these may be taken from the current magazines, or from the supplements of some of our daily papers, the children themselves frequently being able to help in the collection of this material. Not everything bearing upon geography should be accepted, or this equipment will become so burdensome the collection will be valueless. Discrimination should be used in the first selection and a constant weeding-out process resorted to as the material accumulates.

A most excellent series of illustrations of both near and distant parts of the world may be obtained through picture postals. These, too, may now be secured in sets illustrative of a great variety of topics bearing upon our subject. These are so inexpensive that collections may often be made by the pupils illustrative of the country that they are studying, or at least of one country out of a group, different pupils selecting different regions that a larger territory may be covered.

A valuable aid to teachers and one too infrequently used is the diagram. The various textbooks have many figures of this kind that would be very helpful if they might be displayed before the class—such, for instance, as those showing the total production of any commodity and the amount supplied by the various countries concerned. These, enlarged sufficiently for class use, are readily transferred to manila paper.

The Sand Table

A piece of equipment that often proves detrimental to good geography teaching is the sand table. This device has a use, but not the general use frequently assigned to it. The arguments against the modeling of large areas obtain here, too, in the use of sand. The results are so inaccurate that more harm than good must follow. It seems inadvisable, too, to represent definite areas, even comparatively small ones, in sand, for misconceptions are not only fixed but the vital part of the lesson may be actually lost. For instance, a class, perhaps with Vesuvius as an introduction, studies the subject of volcanoes. The teacher asks the pupils to model Vesuvius in sand. He may, by the use of some mild explosive, even have an eruption then and there. What is the result of this work? The reduction of one of the most awe-inspiring, wonderful manifestations of nature to an absurdity. What will they see in the future when a volcano is mentioned? Not one of the wonders of the world, but the sand pile on the desk. A mountain, too, is a magnificent form, and children may be made to realize it, but not by means of the sand table.

The sand table, however, has a function to perform, though not a very important one. It may be used in the representation of certain general rather than specific forms. For instance, a child may be asked to model a hill, though not a special hill, or a valley, which he may be required to describe. It seems better, then, not to use the sand table as the basis of instruction during the introductory work on a topic, for here specific illustrations should be used, and the sand table cannot present these.

Points frequently arise in class work that call for

graphic illustrations. Visualization without such assistance may be beyond the power of the pupils, and here the sand table, though filling a humble position, is valuable. It may also be used as a means of testing knowledge, the children using the sand as they use the pencil, as a mode of expression. After the study of a certain topic, a river system for instance, pupils may be asked to show their conception of it in sand.

Economic Specimens

In the industrial study of geography, samples of the products of the world in their natural and their manufactured states form one of the most necessary features of the equipment. These may be procured in various ways, the simplest by means of the "product cabinets." These cabinets contain a series of large cards, each one being devoted to an important product. The product in its natural state, various articles manufactured from it, and its by-products are fastened to the card, on which a description of the commodity also appears.

The cabinets are quite complete, but a collection made by the teacher and the pupils, though lacking in some respects, would be more valuable. Stores, factories, and importing houses are usually glad to respond to requests for sample products for such purposes. The pupils not only take a greater interest in a collection of their own making but gather up much information in regard to this material in the process and are frequently stimulated to further investigation.

Instruments for Weather Study

There are three important pieces of equipment for weather work—the barometer, the thermometer, and the daily weather map. The barometer may be of the simplest

—it may easily be made by the pupils themselves—but weather work in the upper grades cannot be successfully carried on without it. For this work a barograph, or self-recording barometer, is to be preferred, for the passage of high and low pressure areas is so graphically shown by this instrument that interest is at once aroused and the study of the weather pursued without insistence on the part of the teacher.

For purposes of weather work the thermometer should not be of the variety ordinarily found in schoolrooms. It should be a carefully tested instrument, the tube being backed by metal or by glass rather than incased in wood. The thermometer should be hung out of a north window, that the fluctuations of the mercury will record the variations of temperature in the shade.

The weather map may be secured daily either from Washington or from the nearest branch office. The latter is preferable for most stations, as the nearest office naturally means the most prompt delivery of the map.

The Care of Materials

The care of equipment is as important as its selection. The most perfectly equipped school is in as great a predicament as the poorly equipped school if its material is not arranged so that it may be drawn upon at a moment's notice.

All the maps in any school should be mounted on rollers of uniform length, so as to be readily moved from one room to another, thus making it possible for maps temporarily needed to be easily and quickly changed from room to room. Maps should be rolled up when not in use so that they may be kept clean and so that their features will not be so familiar to the pupils that they will think they know everything the maps have to show them.

There should be a stockroom for the safe keeping of the material that is needed only at certain periods throughout the year. The maps kept here should be tightly rolled and put on shelves or on racks, that they may lie horizontally. The maps should be catalogued and each shelf or rack should be labeled, that the maps to be found there may be seen at a glance.

The lantern slides should be numbered and a card catalogue made. If classified in this way it is an easy matter to select the slides illustrating any topic.

The illustrations should be mounted and then catalogued as in the case of the slides. If this is not done, the collection becomes almost valueless. The process of looking for photographs in an unclassified mass is very much like hunting for a needle in a haystack. This careful arrangement of material requires a great deal of time, but in the end saves much more than it consumes, and is besides a preventive against nervous strain and worry.

No school seems complete without a museum, no matter how simple it may be. This should not of course be purely geographic in character, though geography may contribute much of value, as the material collected for use in connection with the various industries, selected photographs that may be of general interest, or a collection of the rocks of the vicinity, or the common minerals. Cabinets with glass doors are of course best for the preservation and exhibition of much of this material. Some of the shelves should be fitted up with boxes and bottles for the smaller articles and for liquids. Everything in the cabinet should be carefully labeled, the label indicating any points of importance in regard to it as, for instance, the part of the world from which the article came, from whom and by whom it was procured, its market value, and other points of interest. Such museums should be for

the benefit not only of the school and the neighborhood but for other schools as well, whether in the town or somewhat more remote in location. Exchanges are often effected between schools, greatly to the benefit of all concerned.

REFERENCES

Sutherland, W. J., *The Teaching of Geography*, chapters XVII, XVIII, XX; Dodge, R. E., "Equipment for Geography Teaching," *Journal of Geography*, Vol. V, pp. 241–250; Ridgeley, D. C., "The School Excursion and School Museum as Aids in the Teaching of Geography," *Journal of Geography*, Vol. III, pp. 322–332.

THE APPENDIX

A. A List of Equipment with Sources

Maps

Physical:

J. Paul Goode. Physical Wall Map Series. *World: Mercator's Projection; World: Hemispheres; North America; United States; South America; Europe; Asia; Africa; Australia; Philippines.* Others to follow. Rand McNally & Co., Chicago and New York.

Sydow-Habenicht. Orographical Wall Maps. *World on Mercator's Projection; North America; South America; Europe; Asia; Africa; Australia; Russia; British Isles; Scandinavia; German Empire; Austria-Hungary; France; Italy; Iberian Peninsula; Balkan Peninsula.* Rand McNally & Co., Chicago and New York.

Kiepert. Physical Maps. *Western Hemisphere; Eastern Hemisphere; North America; South America; Europe; Asia; Africa; Australia and Polynesia; British Isles; Europe (Middle); Germany; France; Italy; Spain and Portugal; Austria-Hungary; Balkan States; Russia; Scandinavia.* Rand McNally & Co., Chicago and New York.

Stanford, Edward. New Orographical Maps. *North America; South America; Europe; Asia; Africa; Australia; British Isles.* Rand McNally & Co., Chicago and New York.

Bird's-eye View Series Wall Maps. *The World; North America; South America; Europe; Asia; Africa; United States.* Rand McNally & Co., Chicago and New York.

Topographical Contour Maps of the United States. U. S. Geological Survey, Washington.

Relief Models. E. E. Howell. Series: *North America; South America; Europe; Asia; Africa; United States.* Washington, D. C.

Commercial:

Johnston, W. and A. K. *Commercial Chart of the World on Mercator's Projection.* A. J. Nystrom & Co., Chicago.

Outline Maps:

Blackboard Outline Wall Maps. *United States; North America; South America; Europe; Asia; Africa; The World on Mercator's Projection.* Rand McNally & Co., Chicago and New York.

Wall Outline Maps. *The World; North America; South America; Europe; Asia; Africa; Australia; British Isles; Central Europe; United States;* etc. Rand McNally & Co., Chicago & New York. McKinley Publishing Co., Philadelphia.

Desk Outline Maps. Double Size Desk Maps; Large Size Desk Maps; Small Size Desk Maps. The various continents, the leading countries of the world, and sectional maps of the United States. Rand McNally & Co., Chicago & New York. McKinley Publishing Co., Philadelphia.

New Century Development Maps. Silver, Burdett & Co., New York.

Dodge's Geographical Note Books. Atkinson, Mentzer & Co., Chicago.

Weather Maps:

Daily Weather Map. Washington, D. C.

Pilot Charts:

North Atlantic Ocean; South Atlantic Ocean; North Pacific Ocean; South Pacific Ocean. Hydrographic Office, Washington, D. C.

Climatic Maps:

Oxford Rainfall Series Wall Maps: *The World; North America; South America; Europe; Asia; Africa; Australia.* Rand McNally & Co., Chicago and New York.

Meteorological Charts of the Oceans:

North Atlantic; South Atlantic; North Pacific; South Pacific; Indian. U. S. Weather Bureau, Washington, D. C.

Vegetation Maps:

Oxford Vegetation Series Wall Maps: *The World; North America; South America; Europe; Asia; Africa; Australia.* Rand McNally & Co., Chicago and New York.

GLOBES

Political: 6-inch, 8-inch, 12-inch, 18-inch, and 30-inch diameter. Rand McNally & Co., Chicago and New York.

Physical: Jones Model of the Earth. 13-inch and 20-inch diameter. Rand McNally & Co., Chicago & New York.

Slate: 12-inch and 18-inch diameter. Rand McNally & Co., Chicago & New York.

SEASON APPARATUS

Gardner Season Apparatus. Hammett & Co., New York.

LANTERNS AND LANTERN SLIDES

Bausch and Lomb Optical Co., Rochester, New York. Gall and Lembke, New York. Buckeye Co., Cleveland, Ohio. The Mackintosh Stereoptican Co., Chicago. Underwood and Underwood, New York. T. H. McAllister Co., New York.

STEREOSCOPES AND STEREOGRAPHS

Underwood and Underwood, New York. Keystone View Co., Meadville, Pa. H. C. White Co., Chicago.

PICTURES

The Nature Study Publishing Co., Chicago. Detroit Publishing Co., New York. Holzel's Charakter-bilder, E. Steiger & Co., New York.

WEATHER INSTRUMENTS

Thermometer; Barometer; Thermograph; Barograph. (May be obtained from the leading optical companies.)

B. A LIST OF VALUABLE COLLATERAL READING

HOME GEOGRAPHY AND WORLD AS A WHOLE

ANDREWS. *Each and All.* Ginn & Co., Boston.

ANDREWS. Little People Everywhere. *Manuel in Mexico; Ume San in Japan; Rafael in Italy; Kathleen in Ireland; Fritz in Germany; Gerda in Sweden; Boris in Russia; Hassan in Egypt; Donald in Scotland; Marta in Holland; Betty in Canada; Josefa in Spain.* Little, Brown & Co., Boston.

ANDREWS. *Seven Little Sisters.* Ginn & Co., Boston.

DODGE. *Home Geography and World Relations.* Rand McNally & Co., Chicago and New York.

FAIRBANKS. *Home Geography for Primary Grades.* Educational Publishing Co., New York.

GAINES. *Lucita: A Child's Story of Old Mexico.* Rand McNally & Co., Chicago and New York.

LONG. *Home Geography.* American Book Co., New York.

MORRIS. *Home Life in All Lands.* Lippincott Co., Philadelphia.
PAYNE. *Geographical Nature Studies.* American Book Co., New York.
PERDUE and LA VICTOIRE. *Child Life in Many Lands.* Rand McNally & Co., Chicago and New York.
SHAW. *Big People and Little People of Other Lands.* American Book Co., New York.
SMITH. *Eskimo Stories.* Rand McNally & Co., Chicago and New York.
SMITH. *Holland Stories.* Rand McNally & Co., Chicago and New York.
STARR. *Strange People.* D. C. Heath & Co., Boston.

THE CONTINENTS

BOWMAN. *South America: A Geography Reader.* Rand McNally & Co., Chicago.
CARPENTER. Geographical Readers. *North America; South America; Europe; Asia; Australia, Our Colonies and Other Islands of the Sea; Africa.* American Book Co., New York.
CHAMBERLAIN. The Continents and Their People. *North America; Europe.* The Macmillan Co., New York.
DODGE. *A Reader in Physical Geography.* Longmans, Green & Co., New York.
FAIRBANKS. *The Western United States.* D. C. Heath & Co., New York.
HERBERTSON. *Man and His Work.* Adam and Charles Black, London.
HERBERTSON. Descriptive Geography from Original Sources. *North America; Europe; Central and South America with West Indies; Asia; Africa; Australia and Oceania; The British Empire; The British Isles.* Adam and Charles Black, London.
HOTCHKISS. *Representative Cities of the United States.* Houghton, Mifflin Co., Boston.
HUNTINGTON. *Asia: A Geography Reader.* Rand McNally & Co., Chicago.
MACCLINTOCK. *The Philippines.* American Book Co., New York.
MACKINDER. Elementary Studies in Geography. *Our Own Islands; Lands Beyond the Channel; Distant Lands; The British Empire.* George Philips & Son, London.

McMURRY. *Larger Types of American Geography.* The Macmillan Co., New York.

McMURRY. *Type Studies from United States Geography.* The Macmillan Co., New York.

MARDON. *A Geography of Egypt and the Anglo-Egyptian Sudan.* Adam and Charles Black, London.

MONROE-BUCKBEE. *Our Country and Its People.* Harper & Brothers, New York.

REDWAY. *All Around Asia.* Charles Scribner's Sons, New York.

SPYRI. *Heidi.* Ginn & Co., Boston.

Stories Retold from St. Nicholas. *Stories of the Great Lakes; Southern Stories; Western Frontier Stories; Sea Stories; Island Stories; Stories of Strange Sights.* Century Co., New York.

WINSLOW. Geography Readers. *The Earth and Its People; Our American Neighbors; The United States; Europe.* D. C. Heath & Co., New York.

Youths Companion Series. *Toward the Rising Sun; Strange Lands near Home; The Wide World; Northern Europe; Under Sunny Skies.* Ginn & Co., Boston.

INDUSTRIAL AND COMMERCIAL

CARPENTER. Industrial Readers. *Foods; How the World is Clothed.* American Book Co., New York.

CHAMBERLAIN. *How We are Fed; How We are Clothed; How We are Sheltered; How We Travel.* The Macmillan Co., New York.

CHASE-CLOW. *Stories of Industry.* Educational Publishing Co., New York.

KELLER-BISHOP. *Commercial and Industrial Geography.* Ginn & Co., Boston.

ROBINSON. *Commercial Geography.* Rand McNally & Co., Chicago and New York.

ROCHELEAU. Great American Industries. *Products of the Soil; Manufactures; Minerals.* A. Flanagan, Chicago.

SHILLIG. *Four Wonders: Cotton, Wool, Linen, Silk.* (For primary grades.) Rand McNally & Co., Chicago and New York.

C. SOME REPRESENTATIVE LESSONS OUTLINED IN DETAIL

I. A LOAF OF BREAD

A suggestive lesson in Home Geography, outlining the manner

in which one of the needs of the home may be studied profitably. The teacher's aim is not merely to trace the development of the product but more particularly to show how people depend on one another for the necessities of life.

Well chosen pictures, bearing upon the lesson, should be ready for class use.

Let us find out where the bread came from that we had for breakfast this morning.

Did any of you, perhaps, buy it?

Where did you get it?

Of what did the baker make it?

If you have ever watched any one make bread you may tell us about it.

It is a good deal of work to make a loaf of bread, is it not?

Compare the work of the baker, who makes bread for a great number of people, with the work of breadmaking in the home.

Where does the baker get his flour?

How is flour made? (Have some child read before the recitation a simple description of milling and report to the class.)

From whom does the miller secure the wheat which he grinds into flour?

Let us see what the farmer must do in order to grow the wheat out of which the flour is to be made.

Have you ever planted a little garden?

Tell us everything that you did from the very beginning.

What do plants need in order to grow?

What must the farmer do to help his crops grow well?

Let us look at some of these pictures and see how he harvests his crop. Tell all that you can about this part of his work.

Does it look very easy to you?

Though the work is hard, do you think you would like to be a farmer? Tell all the pleasant things about it.

What have we found out about the making of a loaf of bread?

Some one who would like to do the farmer's work may tell us about his part of it.

Some one who would like to grind the grain may tell us about the miller's part.

Some one who would like to bake the bread may tell us about that part of the work.

Why does the farmer work so hard? Why does he not cultivate

only a little piece of ground, just large enough to supply wheat for his family? Where would you and I then get our flour for bread?

Did it ever occur to you that many people must work to supply us with almost everything we need? Think of all the farmers and millers and bakers who are needed to supply all the people in our country with just this one article of food. Think of all the people who are working for us, and on whom we are dependent.

What are some things that the farmer, the miller, and the baker need for which they are dependent upon others?

Which of these things are made in our own city (or in the city nearest us)?

Do you think we should make or produce only so much of anything as we need?

What then can we do with that which we do not need?

Who will show now why every person's work is important?

Does this suggest one reason why so many people live in towns or cities and not in scattered, lonesome homes?

Have you ever heard about any one who was entirely cut off from the rest of the world for a long time?

Tell the story of Robinson Crusoe.

What are the disadvantages of such a life?

II. Lumbering in New England

A suggestive lesson for intermediate grades, illustrating the teaching of an industry, with emphasis on the geographical conditions underlying that industry.

On the day preceding the lesson different children should be asked to look up various phases of the life and work of lumbermen. At the time of the recitation the work of the class, based on pictures particularly, on the study of maps and text, should be supplemented by the contributions of these pupils.

What did we plan to study to-day?

Let us find out what we can about the work of the lumberman and how valuable it is to us.

Have you ever been in a forest? Describe it. (Silence, shade, coolness, trees — great number, kinds, sizes, etc.)

What did you do there?

When the white people settled in America the whole eastern part of our country was a great forest.

Try to picture this section as it looked then. Who can make us see it?

Can you think of some reasons why our country now has fewer forests than formerly? How has much of this area been cleared? How may forests be destroyed in other ways than by cutting the timber?

Think of some part of the country in which there is much wooded land. Look up this region on the map, and say where within it you would expect to find forests and where farming land. Why would you expect to find forests on the mountains rather than in the valleys?

New England was a great forest, too, and some sections are still forested. Find the sections on your map that you think are probably wooded.

What do we call the men who cut the trees?

See what you can find out from the pictures about the way they live. (Logging camps to be described, the work of the class being supplemented by the pupil who had this topic assigned the day before.)

When you think of the lumberman's work, what part of it comes to your mind first?

Describe the felling of the trees. At what season is this work done?

What is done with the trees after they are cut down?

Can you see any reason for doing this very hard work, cutting and hauling, when the weather is cold and stormy? The men might find a much pleasanter time of year than the one they have chosen, might they not?

Who is going to tell us how and when the roads are made over which these logs must be hauled? (One of the assignments of the previous day.)

Look at the pictures and see if you can tell us about the next step in the lumberman's work. (Log drive to be described from illustrations, supplemented again by some pupil who has been asked to prepare the topic.)

What can you think of that might prevent the logs from moving along smoothly?

How might some of these obstructions be disposed of?

Who is ready to tell us about how the lumbermen clear the river of snags, and when it must be done?

Even if this work is well done, what is liable to happen? Why?

Who knows something interesting about a log jam?

You may tell some of the difficulties of the work of the lumbermen before the cutting of the trees begins.

Who can tell about the work during the cutting season?

You may describe the work that is done in the spring.

Do you think you would enjoy the lumberman's life? Give your reasons.

Consult your text and see if you can find out to what cities of New England many of these logs are sent. What is done with the logs at these cities? (Text consulted.)

Why is the situation of each city you have mentioned good for the lumber industry?

Show ways in which we are dependent upon products made from forest trees.

What do you think about the importance of the lumberman's work?

Since lumber is so necessary to us we should certainly take good care of the forests that supply us with this product.

Have we done so?

How have we been careless?

For our next lesson we will find out what we must do to save our forests.

III. Egypt

A suggestive map-study lesson adapted to the upper grammar grades.

What country are we to study to-day?

Have you ever heard Egypt called "The Gift of the Nile"?

Let us find out why it is so called and how valuable the gift is.

Have you a picture in your minds of northern Africa? Describe it. (Main surface features should be brought out, and the desert should be particularly emphasized as to appearance and extent.)

What is the economic value to the world of this great desert region?

Is a desert ordinarily very valuable?

Where does Egypt lie with reference to this desert? Show where it lies with reference to us by walking toward it. (One pupil at a time, while others criticize.)

Trace the route that you would take if you were going to Egypt. Describe it.

About how long would it take to make the journey?

Would you like to go? Why?

What country lies to the east of Egypt?

What have we learned with regard to the surface of the land, climate, and vegetation of Arabia? Compare with the country to the west of Egypt.

Now let us see how conditions in Egypt compare with the countries on either side.

Describe its temperature. (Pupils should refer to seasonal temperature maps.)

In what wind belt does it lie? Describe the direction of these winds.

Describe the surface of Egypt. (From relief or physical map.)

What facts have we discovered that will help us in judging whether the rainfall is light or heavy? Tell what you would expect in regard to the amount and state your reasons. Verify your conclusions. (Rainfall map consulted.)

Compare Egypt in respect to climate and surface with the countries to the east and to the west. (Similarity of conditions emphasized.)

Do you recall any stories from the Bible that you have heard about Egypt? Who can tell the story of Joseph? What kind of a country does this story show northern Egypt to have been?

Is it productive to-day? (Text consulted for answer.)

Have we thus far discovered anything to account for the fact that Egypt is productive while most of the adjacent region is a desert?

Can you suggest anything that may account for it?

Let us see if we can learn why the Nile makes this great difference.

Describe the Nile. (Direction, length, etc. Pupils should use scale to determine its length and then consult table in appendix to verify. Its size should also be compared with that of other great rivers of the world.)

Compare the numbers of its tributaries with those of the Mississippi.

Can you explain why the Nile has so few?

How far does it flow without receiving any tributaries?

Compare the lowest part of the Mississippi plain and the lowest part of the Nile plain.

What name do we give to this land?

Tell how deltas are formed.

Describe the course of the Nile through its delta.

Consult your text to see through what kind of a valley the main portions of the Nile flow. (Upper and lower portions compared.)

Name two important tributaries that the Nile receives from the east.

Where do these rivers rise?

What can you tell about the rainfall of this region?

What influence must this heavy precipitation have upon the Nile?

With what result? (Flooding of the lower valley.)

We ordinarily think of a flood as a disaster. Do you know whether it is a misfortune in the case of the Nile? What are the advantages of this overflow?

Tell what you can about the soil that is deposited by the river in flood.

At what season would you expect the overflow? Why? (Shifting doldrums reviewed.)

What provisions have been made for obtaining water at other times during the year? (The text might be consulted on this point, or some pupil might be asked to look up the subject of irrigation in Egypt and to be ready to tell the class about it.)

What would you expect the leading occupation of the lower valley to be?

Find out what the leading crops are. (Text consulted.)

Do you know whether these crops are of any importance to us?

See if you can find out how Egypt's leading product ranks in the world's trade. (Reference tables.)

Where do you think most of the people in this section would naturally live? Verify your opinion. (Population map.)

Locate the most important cities. Why should cities have grown up at the places which you see shown on the map? (Pupils should be required to learn something about these cities, perhaps as a home assignment.)

To what extent are we justified in calling Egypt "The Gift of the Nile"? (A rapid analysis of the various physical conditions and of the bearing of each upon economic conditions.)

Can you recall any river in our own country that flows through an arid region?

Compare population and industries of the lower Nile and of the Colorado.

What is needed to reclaim the desert in each case?

Would it be appropriate to speak of Arizona as the "Gift of the Colorado"? Why not?

Which region has the advantage in securing a water supply?

What steps are we taking in the Southwest to reclaim portions of our desert?

Under what conditions is there a possibility of reclaiming a desert?

Is it probable that we shall ever be able to reclaim it all?

Compare conditions in northern Africa in this respect with our own country.

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